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Sustainable Development and Health for All

Building the Capacity of National Health Authorities

World Health Organization
Regional Office for South-East Asia

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Sustainable Development and
Health for All

Building the Capacity of National Health Authorities

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Regional Office for South-East Asia
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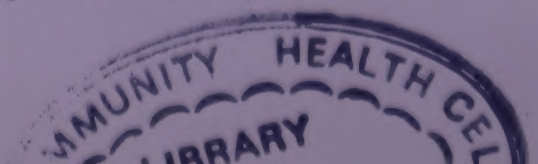


FOREWORD

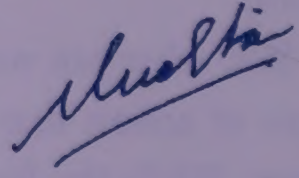
The desire for healthy environments and sustainable development is a global aspiration that has acquired a new momentum following the historic United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro in 1982. People's awareness of the detriments inflicted on the environment by various development processes is today precise and more profound than at any other time in our global history. Yet, actions to address these issues lag far behind this upsurge in awareness. The burgeoning environmental neglect attests to this. Our lakes and rivers have become veritable sewers of untreated municipal and industrial effluents; the air in our cities is heavily laden with the fumes and exhaust from motor vehicles and industry; and our city streets remain cluttered with uncollected litter and garbage. All these conditions pose unimaginable risk to human health.

But, what can we do about it? The answer lies in harnessing all the forces of action that lie within the purview of several developmental sectors. While the health sector in most countries has the responsibility to promote health, it often finds itself handicapped in actually moving the levers that make health happen. This is so because health is not merely a medical issue, but a much wider concept of social well-being. Thus, the onus of responsibility to create health falls upon each one of us in society. In short, health needs to be perceived as everybody's business.

This publication, authored by Prof. Morris Schaefer, answers some of the above questions, and suggests valuable ways of addressing them. It sends out a very significant message relating to the need to change our perceptions of health. Prof. Schaefer very lucidly and eloquently details the important steps to be taken for acquiring the new mindset, as also for implementing the structural changes required to achieve our cherished environmental goal. Policy-makers in the national health sector, and those in related development sectors, should find the new insights provided by him of immense value.

I would like to acknowledge with pleasure, the significant contribution made by the Environmental Health team in our office, in coordinating the publication of this document as a product of the WHO/SEAR programme on incorporating health concerns in sustainable development.

This publication comes at a time when national development efforts are being reoriented and restructured along the principles of sustainable development, and national health systems are being refashioned towards a new health-for-all strategy. It rationally subscribes to the integration of these complementary concepts embedded in both these paradigms. I hope that this contribution from WHO is widely made use of in ministries of health, other national development authorities, universities, and training institutions as a critical knowledge base, and as a 'road-map' for restructuring efforts towards better health in these dynamic times of sweeping globalization.



Dr. Uton Muchtar Rafei
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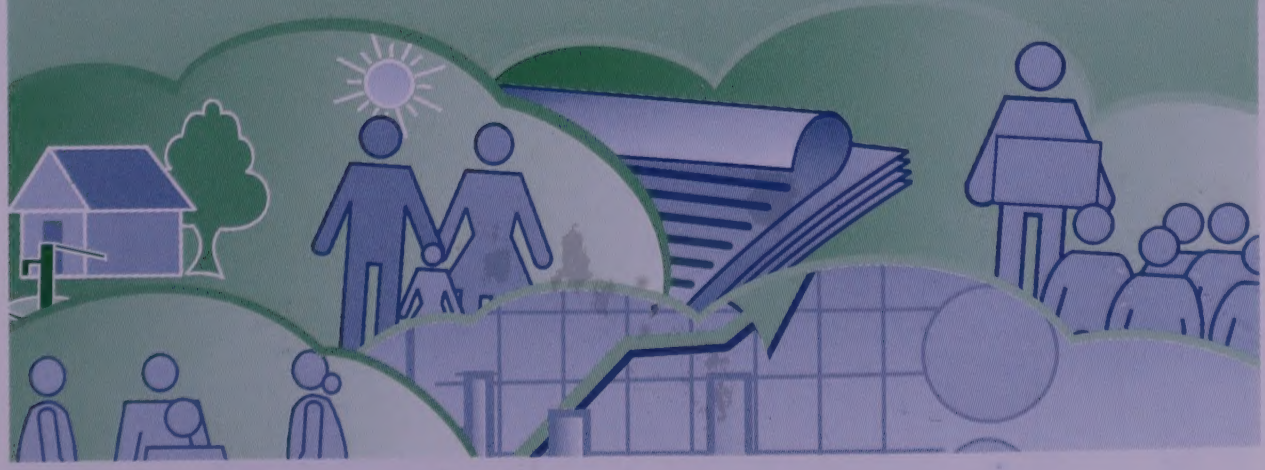
"...a new perspective on health has emerged whereby health is seen as an essential component of sustainable development which requires concerted action by all sectors of society. The 21st Century calls for a new health system which is partnership-oriented, population-health based, and proactive rather than reactive. The health sector must serve as a guide to and be a partner in these actions so that health concerns are represented appropriately at all stages of implementation....

"The health sector has an essential advocacy role to play in highlighting the links between health, environment and sustainable development when future policies are developed and actions planned. A much stronger partnership between the health sector and other sectors is required for reduction of health threats from poor environmental conditions. Renewal of the WHO Health-for-All Policy for the 21st Century, which is currently in progress, provides guidance for the way ahead..."

Health and Environment in Sustainable Development:
Five Years after the Earth Summit.
Report of the World Health Organization to the Special Session of the
United Nations General Assembly, June 1997



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INTRODUCTION

At the threshold of a new century, two major social initiatives challenge the leaders of governmental public health agencies. The intertwined movements toward Health for All and Sustainable Development open new possibilities and opportunities to realize better the mission of public health. At the same time, health leaders are challenged by two stark realities: first, the implementation of these two social movements would require that an extraordinary array of difficulties be overcome, and, second, neither movement can truly succeed unless governmental health authorities make their necessary contribution.

This paper explores how these challenges might be met. Its parts examine sequentially:

- the complementary nature of the health-for-all and sustainable development policies in improving the level of health in all countries;
- the role and function of public health authorities in implementing these policies;
- the tangible and intangible resources that health authorities will need to perform their functions, in the light of constraints that will shape the development of their capacity to perform them, and
- how planning can be used as a tool in meeting the challenge.

Thus, this paper defines the boundaries and components of a problem whose solution will require continuing dialogue and experimentation among and within countries for years to come as health authorities lead their communities towards the "highest attainable standard of health" as a human right.[1]

EXECUTIVE SUMMARY

Health in Sustainable Development

Commitments by countries to implement the sustainable development (SD) concept open new opportunities for advancing the complementary policies of health for all (HFA). Because the state of health is a function of how humans relate to their physical and social environments, and because SD requires intersectoral action and community cooperation, such opportunities match the content of HFA policies and create new openings for their implementation.

National health authorities are critical actors in efforts to realize these potentials. Linking health concerns and actions with environmental and economic development policies requires, in most countries, measures to equip and perhaps reform governmental health authorities, national and local, to play their roles effectively.

Role of Health Authorities

The **general role of health authorities in HFA/SD** may be summarized as follows:

To serve as the community's guardian of, and advocate for, its people's health, by:

- monitoring the health status;
- estimating the contributions of environmental and social factors to health problems;
- analyzing the health needs and requirements in various developmental sectors significant for health;
- formulating specific public health policies, legislation and standards, through sectoral partnerships;
- advocating, facilitating and enabling the health issues to be addressed by competent agencies and communities;
- supporting environmental health service delivery and providing necessary services;

- supporting research necessary for understanding and managing environmental risk, and
- providing technical support and guidance in policy and planning, and evaluation and capacity development.

In order to play this role effectively, the health authority must perform a number of essential functions. These functions relate to the profile of **environment-based health problems** in each country, and may be identified in relation to such categories as safe water and food, pollution control, housing adequacy and occupational health and safety. They may also be identified in relation to the **processes** they entail, such as:

- To develop and update a coherent health policy related to environmental and development factors.
- To serve as the primary advocate of preventive measures to protect, and developmental measures to promote, the public's health.
- To foster community capacity to properly manage health-environment interactions.
- To establish and support monitoring/evaluation networks capable of making health impact and risk assessments.
- To maintain epidemiological surveillance of environment-related diseases.
- To develop, operate and utilize a national information base to serve multiple needs of the strategy.
- To train personnel in identifying, preventing and controlling environmental hazards to health.
- To provide for public education in the protective and promotive aspects of health.
- To collaborate in operating environmental control programmes and services.
- To develop capabilities for multi-agency response to man-made disaster.
- To collaborate in developing and revising health norms and standards.

- To develop and apply methods for evaluating the health aspects of development plans and proposals and their implementation.
- To charter and conduct research into health-environment problems, conditions and interventions.

In order to execute these functions properly, health authorities must have working **linkages** (external to their organizations) with: general government, other governmental sectors, local authorities, voluntary and private organizations, scientific and technical resources, communities and the public, counterparts in other countries and international entities.

Resource Requirements and Constraints

To be able to perform these functions, most health authorities will need to undertake a planned, deliberate effort in capacity-building, which is likely to extend over some years. Such an effort can be regarded as one of resource development, so long as "resources" are defined as including both tangible and intangible factors.

Tangible resources are not only personnel, facilities, equipment and supplies as such, but also their quality, appropriateness, and suitability for implementing and accomplishing the objectives of a health-environment-development strategy.

Intangible resources include valid knowledge, norms and standards, legislation and rules, operational communication networks, systematized information, access to relevant decision-making bodies, negotiated and open agreements with participating organizations, training capabilities, progressively increasing acceptance, and a capacity-building strategy itself.

To be realistic, the capacity-building strategy must be based on an accurate understanding of *external* and *internal* constraints – the expectations, limitations, and other forces to which the strategy must conform, or which must be changed for the strategy to succeed. (What separates "internal" from "external" in this context is the boundary of the health ministry's formal organization, including its local elements.)

External constraints may be country-specific or general. The general constraints include gaps in scientific and technical knowledge, such as relationships between health and environmental factors, methods of risk assessment and management, methods of group and community motivation, and models and methods for the economic evaluation of health actions and outcomes – the last of which is a critical need for health sector involvement in sustainable development decision-making.

External constraints that are country-specific include: *mandates* for health system participation (or lack thereof); *policy orientations* as to sustainable development itself and the role of health and other sectors in its implementation; *basic political factors* of governmental stability and structures, and *basic societal factors*, such as labour-force characteristics, the adequacy of the country's scientific and technical base, and the vigour of voluntary social organizations.

Internal constraints of the health system include such objective factors as the size and competence of the environmental health staff, rigidities in funding allocations that make it difficult to adapt programmes or, on the other hand, experience and structures for health promotion and community action that provide a base from which to move on. Other constraints, involving prevailing beliefs, attitudes and motivations, are more elusive but of equal or greater importance.

Indeed, some health ministries may need to resolve fundamental conflicts between the ideas that govern their public health practice and the ideas that are at the core of sustainable development. Among the issues to be resolved are the degree of dominance of a *medical model* of health and disease, perspectives on the scope and character of *environmental health* work, policies on the *decentralization* of control and the *devolution* of responsibilities and skills, attitudes toward *political involvement*, and the force of *institutionalized specialization* on the organization's behaviour, the last of which requires reconciliation with holistic models and cooperative efforts. The analysis and resolution of conflicts between these factors and the emerging modes of community

health work may be crucial to the health ministry's progress towards capacity-building for HFA/SD.

Planning for Capacity-Building

Planning for HFA/SD resource development is a subordinate but essential component of the planning of health-environment-development strategies. Most of the 100 national health authorities that have initiated strategic planning in recent years have advisedly started with a health situation assessment; some of this experience underlines the need for resource development with respect to information quality and management and the intangible factors in intersectoral cooperation.

Health problem assessments may provide the basis for preliminary estimates of resource needs, which should be followed by an analysis of how those respective needs fit into the country's policy context and planning practices. The potential uses and limitations of "rational" planning models are discussed and annexed.

Conclusions

Effective participation by governmental health leaders in sustainable development strategies is critical to fulfilling the promise of Health for All. Failure to capitalize on new openings, and less-than-effective advocacy and action will result in adverse health effects from uninformed development policies, as well as the loss of opportunities to promote community health.

Several decades of health development experience, including the broadened scope of environmental health, have helped to define the role and functions of health authorities as partners in sustainable development. To be able to perform their emerging tasks, these authorities need to formulate and implement strategies to develop their needed capacity.

1. HEALTH IN SUSTAINABLE DEVELOPMENT

1.1 Background

Two related social movements of the late 20th century, which are of critical importance to national health authorities, point the way towards improving human health in the coming century:

1. Health For All, sponsored by governments through the World Health Assembly supported by the World Health Organization, and
2. Sustainable Development, sponsored by the United Nations General Assembly, subscribed to by almost all governments, and supported by a wide variety of agencies of the UN system, including WHO.

Although often viewed as distinct undertakings, the two movements are not only proceeding in parallel, but are increasingly intertwined. In that the Rio Declaration of the 1992 Earth Summit identifies human well-being as the central concern in sustainable development, the earlier health-for-all movement can be seen as a forerunner of sustainable development.

1.1.1 Health for all

Health for All (HFA) was formally enunciated in 1977 as a process whose goal was to achieve for people everywhere a level of health that would enable them to lead socially and economically productive lives. The evaluation of the HFA experience over two decades led the World Health Assembly to charter a "Renewal of Health for All" effort to reorient the process (1) to the lessons that have been learned; (2) towards stronger HFA implementation in countries, and (3) to new global developments. These developments include changes in disease trends and in patterns of commerce, industry and technology; they also include connecting HFA with sustainable development. The values emphasized

in this renewal effort are, first, the highest attainable standard of health as a human right, and the basing of health policies, research and services on ethics, equity and gender sensitivity.

The connection between the renewal strategy for "Health in the 21st Century"[1] and sustainable development is evident from the special attention given to intersectoral action to modify the determinants of health.

The said strategy recommends four interconnected lines of action that overlap the younger initiative:

- combating poverty,
- promoting health in all settings,
- aligning sectoral policies that affect health, and
- including health in sustainable development planning.

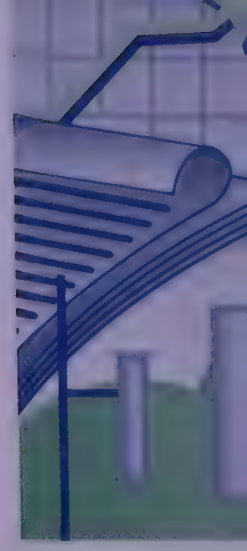
1.1.2 Sustainable development

The sustainable development (SD) concept emerged in 1987 out of concerns over the increasing degradation of the natural environment and the wanton exploitation of finite resources. The concept was stated as: "Humanity has the ability to make development sustainable – to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs.[2] Sustainable development[3] became the organizing concept of the 1992 United Nations Conference on Environment and Development (UNCED) – the "Earth Summit" – at which governments pledged their commitments

1 World Health Organization. *Health for All in the 21st Century.* Geneva, Document EB101/8, 1997.

2 *Our Common Future: Report of the World Commission on Environment and Development.* Oxford, Oxford University Press, 1987, p. 8.

3 The concept implies not only the balancing of short and long term objectives, but also– as set forth by the World Bank – going beyond customary definitions of capital only in economic terms to take account of natural capital (the resource base), human capital (the economic functioning of a population), and social capital (the viability of institutions and associations in the community). Serageldin, I. *Sustainability and the wealth of nations: First steps in an Ongoing Journey*. Washington, The World Bank, 1995.



to its implementation, through formal treaties on global problems and pledges to bring their domestic policies into conformity with the concept.

The UNCED declared the primacy of human needs in relation to economic development and management of the physical environment. It also reviewed the social dimensions of development – including human health – and the ways in which social organization could be strengthened to solve emerging problems.[4]

In the following years, SD has likewise been the focus of UN conferences on the health-related social factors of population, women, human settlements, social development and food, as well as the subject of meetings on problems of climate change and chemical safety. Meanwhile, country and regional strategies are being formulated, using a variety of approaches and achieving varying degrees of completeness. At a special session of the UN General Assembly in June 1997, progress was reviewed and government commitments were reaffirmed.

Both HFA and SD – like the WHO Constitution's definition of health as "a positive state of physical, mental and social well-being" - are general statements that require their elements, target and methods to be made explicit, if they are to become operational. At the international level, such specification has been advanced for HFA (and Primary Health Care) in documents published between 1978 and the present; for SD, considerable specification was incorporated into *Agenda 21* and in materials issued by UN system agencies following the UNCED. Ultimately, however, the specification that makes a difference in people's lives, that translates the concepts into practice, has to be done at country and local levels: matching principles with conditions, making policy choices (sometimes between competing goods), setting priorities, and making investments in structures and programmes to implement policies. Such country and local specification is a continuing and adaptive process, as conditions change and opportunities arise.

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4 *Agenda 21: the United Nations programme of action from Rio*. New York, United Nations, 1993.

TABLE 1

Interaction of Health Goals and the Environmental and Social Elements of Agenda 21

Priority programme objectives in Chapter 6 of Agenda 21, "Protecting and Promoting Human Health"

Degrees of interaction

x = significant
xx = substantial
xxx = intense

AGENDA 21 SUBJECTS AND CHAPTERS	Meeting primary health care	Control of communicable diseases needs	Protecting vulnerable goups	Meeting urban health challenges	Reducing health risks from pollution hazards
I. Social and Economic Dimensions					
3. Combating poverty	xx	x	x	x	xx
4. Changing consumption patterns	xxx	xx	xxx	xxx	xx
5. Demographic dynamics	x			xx	xxx
7. Human settlements development	xxx	xx	xxx	xxx	xx
8. Integrating environment and development in decisions	xxx	xx	xxx	xxx	xx
	xxx	xx	xxx	xxx	xxx
II. Conservation and Management of Resources for Development					
9. Protection of the atmosphere	x	x	xx	xx	xxx
10. Land resources planning/management	xx	xx	x	xx	xx
11. Combating deforestation	x	x	x		xx
12. Desertification and drought	xx		xx		
13. Mountain ecosystems	xx		x		x
14. Agricultural and rural development	xxx	xx	xxx	x	xxx

15. Conserving biodiversity	x	xx	x	x	
16. Managing biotechnology	xx	xxx	xx	xx	xxx
17. Protecting oceans, seas, coasts	xx		x	xx	xxx
18. Freshwater quality and supply	xxx	xxx	xx	xxx	xxx
19. Managing toxic chemicals	x	xx	xx	xx	xxx
20. Managing hazardous wastes	x	xx	xx	xx	xxx
21. Managing solid wastes and sewage	xxx	xx	xxx	xxx	xx
22. Managing radioactive wastes			x		xxx
III. Strengthening the Role of Major Groups					
24. Women	xxx	xx	xxx	xx	xx
25. Children and youth	xxx	xx	xxx	xx	xx
26. Indigenous people	xx	xx	xxx		
27. Non-governmental organizations	xxx	xx	xxx	xx	xx
28. Local authorities	xx	xx	xx	xx	xx
29. Workers and trade unions	xx	x	xxx	xx	xxx
30. Business and industry	xx	x	xx	xxx	xxx
31. Scientific/technical communities	xx	xx	xx	xxx	xxx
32. Farmers	xxx	xx	xx	x	xx
IV. Means of Implementation					
33. Financial resources and mechanisms	xx	xx	xx	xx	xx
34. Technology and its transfer	xx	xx	x	xx	xxx
35. Science	xx	xx	xx	xx	xxx
36. Education/public awareness/training	xxx	xxx	xxx	xxx	xxx
37. Capacity-building	xxx	xxx	xxx	xxx	xxx
38. International institutional arrangements	x	xx	x	x	xxx
39. International legal instruments/mechanisms	x	x	x	xxx	
40. Information for decision-making	xx	xx	xx	xxx	xxx

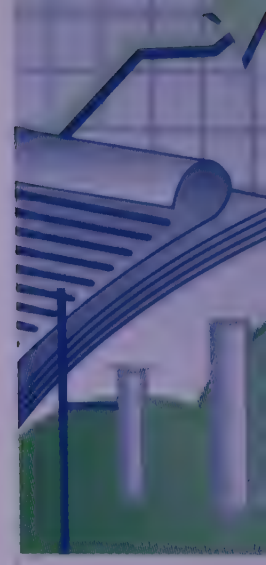
As might be expected, the implementation of SD in countries involves differences in pace and scope, in the degree of decentralization and penetration, and in patterns of governmental participation. Another difference is the degree to which health advocates have become integral participants; in some, participation is nominal or marginal. *Among such advocates, national and local health authorities have a unique and indispensable role to play, because of their resources, mandates, and governmental status.* Their participation is crucial, if the complementary goals of HFA and SD are to be realized, even in part.

1.1.3 How HFA and SD relate

A thorough understanding of how HFA and SD support each other is essential for defining, in each country and community, the role and function of health authorities, their patterns of participation and partnership, and the resources they will need to be mobilized and developed in order to meet their goals. Five aspects of the relationship between the two movements should be recognized:

1. **Economic and environmental policies based on sustainable development support the Health-for-All goals in the short as well as long term**

Annex A, reproduced from WHO's report to the 1997 Special Session of the UN General Assembly, summarizes the etiological and social relationships among health, the socio-physical environment and social factors, including economic development, the distribution of wealth and provisions for people's basic needs. The Annex also identifies the special situation of such vulnerable groups as children, women and the poor, as well as the situations of countries in transition between limited and more advanced technological and commercial development. Actions are suggested to protect against biological, chemical and physical hazards that are associated with communicable and chronic diseases, mental impairment, injury and premature death.



2. The sustainable development framework clarifies the health determinants that Health-for-All seeks to affect positively

The first section of *Agenda 21*, the UNCED action plan, deals with the "social and economic dimensions of development" and its relationship to human environments; "Protecting and Promoting Human Health" appears as Chapter 6 of *Agenda 21*. This chapter was developed with the active participation of health representatives of the WHO Member States, using the extensive report of the WHO Commission on Environment and Health.[5] The five objectives around which that chapter is organized – including Primary Health Care and protecting vulnerable groups – appear as column headings in Table 1. The Table makes the point that human health is interrelated with all of the focal subjects of *Agenda 21*, as to causation and interventions. Like HFA, sustainable development goals involve equity, the reduction of poverty, community-based action, and cooperation across sectors. It must be realized that the goals of both movements aim at – and depend on – healthy people, capable of participating in sound social and economic development.

The range of health determinants is extremely wide. For example, account must be taken of the globalization of trade and economic relations, the health implications of which include the safety and availability of drugs, food and consumer product safety, the spread of infectious agents, and contributions to atmospheric and marine pollution, as well as the impact of these interchanges on the employment and financial stability of national economies.

Other health determinants include trends and changes in:

- population and settlements (growth, age profile changes, urbanization),
- food and agriculture (pesticide pollution, deforestation, water impoundments),

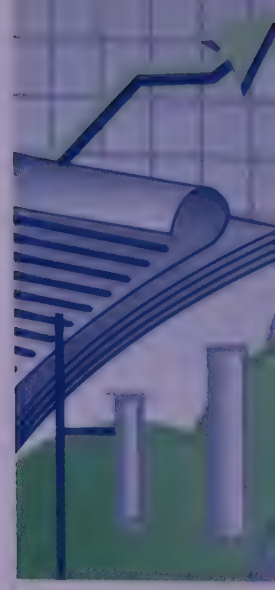
5 WHO Commission on Environment and Health. *Our Planet, Our Health*. Geneva, 1992.

- water resources (depletion of aquifers, pollution, destruction of aquatic life),
- energy (increasing consumption and ecological effects, improper use of biomass),
- industry and mining (wastes, resource depletion, occupational hazards),
- environmental chemicals (ubiquity, poor controls, residues, trans-national movement),
- commerce and communications (increasing consumption, cultural interchanges), and
- ecological alterations (global warming and climate change, ozone layer destruction, deterioration of marine ecosystems).[6]

3. **Sustainable development processes widen the openings for intersectoral and community cooperation that are integral to Health-for-All, and thereby increase the scope of feasible preventive health interventions**

Intersectoral cooperation and action is an integral element of Primary Health Care (PHC), as a basis for Health for All. Evaluations of PHC implementation in countries indicate that this element has been the least successful and the most difficult to realize. The difficulties have been ascribed to ineffective communication, inadequate political backing and coordination, failures in linking health factors to the concerns of other sectors, the inherent rigidity of sectoral boundaries, and the lack of perceived benefits to sectors from whom cooperation is solicited. The progressive implementation of SD policies is likely to offer new and more potent opportunities for such cooperation. By its very nature, sustainable development is a multi-sectoral undertaking. Rather than any sector requesting assistance of others (which is how Health for All may be perceived), sustainable development calls for concerted planning and action by virtually every social sector, every enterprise and organization, and all

6 Pan American Health Organization. *Health and Environment in the Sustainable Human Development of the Americas*. Washington, 1995, pp. 3-6.



governmental levels. By harmonizing the intersectoral actions of HFA with those of SD, health advocates can join in processes that are based on widely-shared concerns and broadly-undertaken commitments.

Such cooperation, whether undertaken at the neighbourhood, city or national level, carries the potential of benefitting from shared resources, including personnel skills and access to organizations and groups open to one sector but not another. Joint programming can not only avoid duplication and competition among agencies, but can also effect economies and improve the effectiveness of outcomes. Problem analyses and recommendations for policy changes that come from networks of experts and advocates can carry strong political force and lead to the harmonization of standards, legislation and regulations.

For an example at the intercountry level, the *1997 Declaration of the Environmental Leaders of the Eight*[7] *on Children's Environmental Health* sets forth the need for risk assessment, standard-setting, and other measures to reduce children's exposures to lead, unsafe drinking water, endocrine-disrupting chemicals, tobacco smoke, and air quality. As a more speculative example, the resurgence of malaria, as both insect vectors and parasites have become resistant to chemical agents, points to the limitations of predominantly technological interventions. More systemic approaches become possible under policies that, on the one hand, restrict environmental degradation and encourage ecology-based controls and, on the other, inform and mobilize people to improve their living environments. Such approaches become essential if, and as, the climate change enlarges the viable habitats of malarial and other parasites and their vectors, thereby increasing the impediments to economic development and human well-being.

4. Government's commitments to sustainable development can strengthen the political basis of related health-for-all policies

Apart from providing a common focus for social action on health-determining conditions, the fact that commitments to sustainable

7 The reference is to the "G-8" association of the leading industrialized countries.

development have been made at the highest level of government opens the way to making health concerns more visible and viable in development planning and policies. Doing so requires full participation by health advocates in sustainable development processes, as called for in the renewal of HFA. Such participation can help in changing the perception of health as an object of social expenditure, so as to see community health as a subject of investment, assisting in efforts to reduce duplication and waste in services, and working towards improved living standards. It can also help in recognizing that lending and development assistance agencies are now giving priority to sustainable development projects with social components.

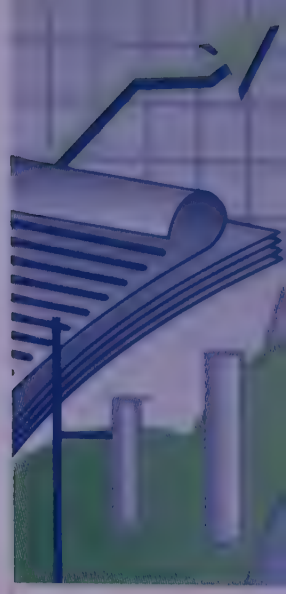
5. Health-for-all efforts can strengthen the steps towards sustainable development

Despite political commitments to adopt sustainable development strategies, the implementation process has scarcely begun in many countries. This is so because the process faces considerable opposition, not only from those who seek to maintain the benefits they obtain from current patterns of resource use, but also from people's ingrained habits of consumption and exploitation and, sometimes, from the settled ways of policy planners. Experience in many countries demonstrates that, when the policy dialogue considers only the competing values of economic growth and environmental conservation, the result is often a stalemate or the dominance of economic growth advocates, sometimes to the detriment of potential social benefits. Other experience shows that when human values become part of the dialogue, as when health and well-being factors are included in the criteria, different decisions result. Failure to represent health values in development planning and decisions is, thus, a disservice to the community.

In some countries, a start has been made on realizing the advantages of linking Health for All with sustainable development processes. A variety of approaches have been taken, including connecting the local Agenda 21 Committees with the Healthy Cities/ Villages/Community Councils sponsored by the WHO. In many

countries, however, realizing these advantages remains in the realm of speculation. Linkages will come about only if community health leaders act to establish them and make them operational and useful. Establishing the basis for health sector participation, as discussed in the following sections, is required in many countries. In all countries, however, building the sector's capacity to participate effectively is, and will be, needed.

In meeting that need, the actions taken – or not taken – by governmental health authorities are crucial to the outcome.



2. ROLE OF HEALTH AUTHORITIES

Determining what health agencies should do, and how, in a national health-environment-development strategy remains, in virtually all countries, an open question. Yet the question must be answered, if only because restricting health participation to medical measures – preventive and curative, of even the best quality and availability – falls short of dealing with the full range of health determinants. Providing trauma services and educating drivers and pedestrians can only go part of the way towards reducing vehicular deaths and injuries, considering the many physical and social factors involved in their occurrence. Ensuring food safety can mean little, if insufficient food is produced or made available to people. In that health is often determined by community provisions for physical and social security, internal order, and the regulation of economic and social behaviour – or the lack thereof – the actual responsibilities for health outcomes are broadly distributed through every society. Health is a paramount goal of the state.

The term "health sector", pertaining to a division of the national economy, generally connotes the totality of health service providers (practitioners and institutions), as well as the supporting industries that furnish supplies, medicines, and equipment, and the public and private financial organizations that organize services or administer payment schemes. Any general answer to the question of that sector's role in SD also requires a translation into terms that are meaningful in national circumstances. These circumstances include not only the configuration of a country's social and economic *needs*, but also the configuration of its *response* capabilities, as conditioned by its history, politics, institutional structures and culture. Such circumstances also apply to a country's definition of its health system and, within that, the place of the health sector and the national health authorities.

Further, countries differ greatly in how they organize governmental health entities and the functions they assign to them. The one constant

is that these authorities have a "dual personality": they are components of both an economic sector and a political structure. In some countries, the health ministry may be a major (or monopoly) provider of medical and environmental health services; in others, there may be little or no service provision, with health authorities restricted to surveillance and regulatory activities. Structurally, the ministries, departments, and official agencies that are denoted as "national health authorities"[8] differ in size, resources, authority, legalized and informal responsibilities, and how they relate to general government and to private and voluntary entities. Differences among them reflect their community's ongoing processes of responding to needs (and wants) over time, with changing policies, priorities and opportunities. The advent of the SD movement opens another avenue for their dynamism.

Despite differences among countries, the role of health authorities in sustainable development can be stated in general terms, as long as the following two limitations are recognized:

1. Listings of problems, programmes and responsibilities are not considered to be prescriptive, but are to be adapted to country conditions and needs, and
2. The governmental functions that make up the role may be performed by the national health authority or may be performed by other entities, governmental or private.

The latter statement implies that where the health authority has no *operational* responsibility (or a limited one) for a function, it may nevertheless remain professionally or morally responsible, for ensuring that the function is properly performed. This is a long-established, fundamental public health concept, especially with respect to preventive and control activities, which are ordinarily delegated to individuals (mothers, householders) and firms (food vendors, water companies).

8 Throughout, "national health authority" connotes the entire governmental health service at central, provincial and local levels, even where local health units may be in another ministry (e.g. Interior), and in both unitary and federated countries.

2.1 General Functions of Health Authorities

Two recent WHO statements provide complementary perspectives on the general role of the health sector in relation to SD and HFA. The first of these views is oriented to how the health sector should contribute to intersectoral cooperation with respect to environment-health relationships.

> ***Somewhat abridged, this statement defines the essential functions of the sector as:***
>
> - monitoring of the overall (environmental) health status... ensuring that health is monitored at the level of the city, neighbourhood or district level, and intra-urban and intra-district differences are detected....;
> - estimating the contribution that various environmental and social factors are making to health problems....;
> - analyzing environmental and social health needs and requirements in various development sectors that are significant for health....;
> - formulating specific public health and environmental health policies, health-related legislation and standards, in partnership with each sector....;
> - advocating, facilitating and enabling the health issues to be addressed in the work of competent agencies, organizations and communities at all levels, and promoting health and environment generally;
> - supporting environmental health service delivery and providing such services as are feasible...at various tiers of government;
> - supporting...research which may be necessary...to better understand, assess and manage environmental health risks, and
> - providing technical support and guidance in policy and planning, evaluation and capacity development.[9]

9 World Health Organization. *Intersectoral Action for Health: Addressing Health and Environmental Concerns in Sustainable Development.* Geneva, WHO/PPE/PAC/97.1, 1997.

The HFA renewal effort has stated the essential functions of "sustainable health systems" as:

- making health care available across the life span;
- preventing and controlling disease, and protecting health;
- promoting legislation and regulations in support of sustainable health systems and sustainable development;
- developing health information systems and ensuring active surveillance;
- fostering the use of, and innovation in, science and technology for health;
- building and maintaining human resources for health, and
- securing adequate and sustainable financing.[10]

Although the first of these functions may seem, at first glance, to be out of place in a discussion of health and environment relationships, it is in fact integral to a country approach to sustainable development. First, the availability and quality of health care is itself a factor of people's environment, both (1) as a resource for protection and cure, and (2) as a characteristic of the community's state of development and its provisions for equity. Second, the preventive and care services contribute to the state of the community's[11] human capital, particularly its age structure and functional capacity, the more so when linked to policies and actions designed to affect other economic, environmental and social determinants of health.

This HFA statement speaks of the functions of health *systems*, leaving the role of governmental health authority open to national

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10 *Health for All in the 21st Century, op. cit.*

11 "Community" in this context is not limited to its customary connotation of locality, but refers to its generic meaning of a shared condition or interest among persons; thus, women, children, the elderly and certain ethnic groups may be considered communities. In governmental terms, the term also connotes state, regional and national communities; in relation to health problems, it may likewise connote intercountry, international and global communities.

specification. But even where such authorities have limited responsibilities for providing services, the government nevertheless remains responsible for the adequacy of the system, no matter which functions are assigned to the public or private sphere or how service provision responsibilities are distributed among the sectoral agencies of the government.

Given the responsibility and the exploratory nature of health-environment-development strategy formulation, further specification of governmental health functions, with special attention to those of health authorities, is needed to make the above general statement operational.[12]

2.2 Problem-oriented public health functions

Public health functions can be identified in two distinct ways: according to established problem foci, such as sources and settings of risk, or according to the processes to be carried out in order to solve problems or ameliorate the conditions of risk. Both methods of classification are useful in examining the functions pertinent to health in sustainable development; in fact, they can be understood as forming the two dimensions of a matrix. In this section, the former are identified.

Over the last half century, the traditional environmental foci of public health concern – water supply and basic sanitation – have expanded as problems induced by ongoing technological, economic, demographic and social changes have emerged. The health implications of these problems are summarized in Annex A.[13] With respect to conditions in the physical environment (usually affected and modified by what is happening in the social environment).

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12 The need to specify functions is justified by the technical difficulties in planning for capacity-building that is discussed in Section 4.

13 *Health and Environment in Sustainable Development: Five Years after the Earth Summit.* Geneva, WHO/EHG/97.8. After examining the forces that are driving current health and environment trends, this report reviews the major human activities that affect environmental quality, the complementary relationships between poor environmental quality and exposures and risks to human health, and the environmental context of health conditions.

The problem areas of concern are:

- Production and protection of safe water
- Water resources and pollution
- Town planning and land use
- Housing standards and other habitat concerns
- Drainage, sewerage, and solid waste disposal
- Protecting soil
- Vector control
- Hazardous substances and wastes
- Atmospheric pollution
- Noise
- Radiation
- Food quality and safety
- Drug quality
- Occupational health and safety
- Transportation safety
- Veterinary public health
- Toxic chemicals

(These problem categories are not mutually exclusive. Toxic chemicals, for example, appear in water and air pollution, food safety, hazardous wastes, soil protection, occupational safety, and habitat concerns; control of medical wastes may entail radiation and chemical, as well as microbiological hazards. But the listing is reflective of categories of concern that are found in the policies and programmes of various countries and – since most such activities grow by periodic additions – it is unrealistic to expect that strict logic will be observed in moving from changing problem concerns into programmes of control and improvement).

Which problem foci lead to policies that explicitly establish governmental responsibility depends on ecological circumstances (e.g. island vs. continental countries); the country's stage of economic and technological development, and the state of its political and social system. Further, how a government chooses to execute its responsibilities will

vary according to the political choices about what to delegate to private auspices and how to distribute governmental monitoring and control activities among public sector agencies. Thus, one finds considerable country variation with respect to the assignment of operational responsibilities for environment-related health problems among ministries of health, environment, industry and labour, and public works. Whatever distribution of operational responsibilities may emerge from the political process and the weight of history, the public health authorities cannot escape their professional and moral responsibility for monitoring the impact of the system's operation on people's health.

2.3 Process-Oriented Functions of Health Authorities

Executing health authority responsibilities, almost without regard to which problem areas are of concern, requires that certain processes be carried out. Some of these processes – monitoring, surveillance and advocacy, for example – support the realistic specification of problems, the making and modification of policies, and the revision and updating of programmes. Other processes, such as training, education and building community capacity, support programme implementation. As with the problem-oriented functions, health authority responsibility may be unitary or shared. In the latter case, action is exercised with another sector, as when health and environment ministries jointly conduct or manage environmental monitoring, or when health and education ministries collaborate in the development of teaching materials and projects. The community health functions for which national health authorities may take responsibility include:

1. **To develop and periodically update, as part of a sustainable development process, a coherent health policy related to environmental and development factors**

Although the policy function as a whole is a collaborative one, it is primarily the responsibility of the national health authority to propose or establish those elements of the government's development policy that pertain to health. As in the case of *Agenda 21,* illustrated in Table 1,

the policy may be stated as a discrete component of the national strategy and also within other strategy components concerned with various aspects of the environment and the economy. (To inform health sector entities, a collated summary of the health aspects of national/community development policies might be useful.)

2. **To serve as the primary advocate of preventive measures to protect and developmental measures to promote, the public's health**

In addition to representing health considerations in the making of policies and plans at all governmental levels, performance of this function entails mobilizing the energies of private and voluntary health interests in coherent educational programmes and advocacy efforts; increasing the awareness in related governmental agencies and among business, labour, and farmer organizations, of health-related environmental issues, and disseminating information and advice on behavioural and environmental modifications that have impacts on health.

3. **To foster community capacity to properly manage health-environment interactions**

Because environmental management involves actions that ultimately are decentralized to groups, households and individuals, the implementation of health-environment-development strategies depends on how well these many actors are informed, motivated, organized and supported. This function is closely related to that of advocacy and involves many of the same collaborators and networks, seeking to enhance the ability of local organizations to educate families and workers, foster neighbourhood and self-help projects, and develop local initiatives.

4. **To establish and support monitoring and evaluation networks, capable of carrying out health impact and risk assessments**

Such networks, which may be integrated with those of other sectors, or use their data, are needed to identify threats to health from existing environmental practices and conditions and from proposed local or regional

changes in land use, water resources, settlements, agriculture, industrial and transportation processes, energy generation, shelter and occupation.

5. **To maintain epidemiological surveillance of environment-related diseases**

Using connections to the networks described in (2.3.4), performance of this function should provide for early identification of outbreaks and other critical events and for informing decision-makers and the public about situations and trends involving biological, chemical and physical hazards in the environment.

6. **To develop, operate, and utilize a national information base to serve multiple needs of a health-environment-development strategy**

Strategy implementation will require accessible and timely information to support planning, training, public information and education, research and evaluation. Needed information includes situational and baseline data from various sectors, up-to-date scientific information from national and external sources, documentation of norms, and operational reports and assessments. Of critical importance are arrangements for the organization and processing of information, and for their accessibility to a broad range of users. The substance of health-environment-development strategies strongly implies multisectoral sponsorship of, and participation in such an information mechanism, for which a variety of structures might be useful. Health authorities, enlisting the advice of relevant leaders in the scientific community, should participate in the design, and operational and evaluative phases of developing this information base.

7. **To train personnel in identifying, preventing and controlling environmental hazards to health**

The human resources element of a health-environment-development strategy is aimed at increasing the capacity of workers and supervisors to act effectively in order to achieve the strategy's goals. Staff training by or on behalf of the health authority should include more than health

sector workers. It should extend to personnel in such sectors as agriculture, public works, industry and labour, whose duties enable them to affect working conditions, the management of hazardous substances and processes, and the safety of products reaching consumers. Community-based auxiliaries and volunteers, in various sectors and nongovernmental organizations, will also require training, as will certain personnel in private enterprises.

8. To provide for public education in the protective and promotive aspects of health

Education of the public, especially householders and workers, may be accomplished in cooperation with the schools, community groups, labour organizations, and the mass media. Beyond seeking a better informed citizenry, education should be aimed at changing attitudes and promoting sound practices in daily living. Such education strengthens the basis for effective community management of environmental and development problems (as in 3), whether through the various forms of "Healthy Cities", other healthy community programmes, and Primary Environmental Care (PEC) programmes that already operate in some countries.

9. To collaborate in operating environmental control programmes and services

Health authorities may be called on to perform a variety of supporting activities in environmental management, such as providing information and advice, and sharing in regulatory responsibilities in programmes organized on intersectoral and intergovernmental bases, including those executed through public-private partnerships with industrial, trade and community entities.

10. To develop capabilities for multi-agency response to disasters and accidents: natural and man-made

In addition to the mobilization of medical assistance to injured victims, health authorities may be required to provide assessments of persisting

hazards, the adequacy of remedial actions and necessary protective measures for survivors and evacuees.

11. To collaborate in the development and revision of health norms and standards for the national strategy

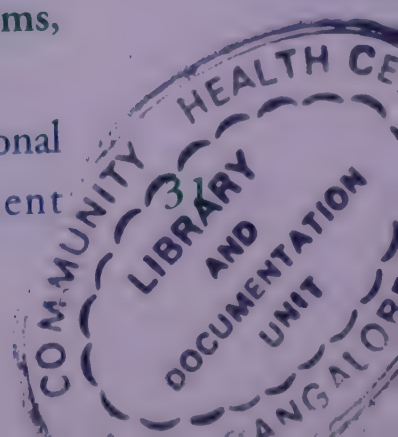
The implementation of a health-environment-development strategy requires norms for assessing the health implications of proposed economic development projects and for regulating the ongoing production, distribution and waste management activities in industry, transportation, energy production, farms and fisheries, and households. Normative guidance, based on sound scientific and technical information, will also be required by legislative and administrative leaders in framing statutes, rules and plans.

12. To develop and apply methods for evaluating the impact on health of development plans and proposals, and their implementation

Although *environmental impact assessments* of proposed developments are required increasingly in many countries and by local jurisdictions, they rarely include the implications for the social environment; requirements to assess the implications on health are even rarer. In part, this shortcoming is a political phenomenon, resulting from decision-makers' unfamiliarity with health issues, and perhaps resistance to the complications introduced by their inclusion. In part, however, it is also a technical issue that arises from the incomplete state of existing methods, aggravated by a scarcity of skills in adapting the existing methods to particular situations. Besides evaluating the expected impacts on health of development undertakings, evaluations are also needed to prevent adverse health effects from environmental modifications occurring during their implementation.

13. To charter and conduct research into health-environment problems, conditions and interventions

As the conditional nature of many elements in this text illustrates, additional and better knowledge about health-environment-development



relationships and actions is an immediate and continuing need, within and among countries. One part of the need is for "clean technology": ways to reduce pollution, resources drain and other forms of ecosystem deterioration. Another part is connected with formulating and implementing sustainable development strategies – in broad terms, needs for better methods for, and knowledge from:

- risk assessment, including methods usable in resource-poor and emergency situations,
- risk management (techniques and protocols),
- economic valuations of alternative policies and techniques,
- indicator construction and validation,
- influencing individual and group choices and behaviours,
- strategies and techniques for networking and inducing cooperative action,
- information system development, operation, and utilization,
- programme evaluation and revision, and importantly
- adapting and applying general techniques to local situations, including the issue of problem specification.

2.4 External Linkages of Health Authorities

This document, among others relating to sustainable development, stresses the importance of cooperative, collaborative action and of community mobilization and participation. Apart from the necessary linkages internal to the national health authority, (a subject considered in Section 4), the authority's external linkages fall into no less than seven categories listed below.

Several categories have relatively few members; in others, the numbers are extensive. Even for categories where linkages exist, a widening of the subjects of concern and making additional contacts are likely to be required.

The needed linkages are with:

- **general government**, for formulating and altering policies, enacting legislation, ratification of norms, and procurement of resources; where economic planning is organized under the head of government, rather than in a sectoral agency, involvement in strategy development and evaluation falls into this category;
- **other governmental sectors,** for collaborative planning, resource development, information management, norm-setting, and integrated programming and operations;
- **intermediate and local government authorities,** for devolved responsibilities, information exchanges, resource allocations, policy and norm applications and adaptations, and access to local groups;
- **voluntary and private organizations,** directly and through such other sectoral ministries as industry and education, for resource mobilization, local communication, joint and autonomous action programmes, and information exchange;
- **scientific and technical resources,** including universities and research institutions, for obtaining needed resources in education and training, research and technology development, and information management;
- **communities and the public,** including informal organizations, to increase awareness and understanding, promote behaviours consistent with health in sustainable development; this category includes professional and trade communities, as well as localities;
- **other countries and international entities,** with respect to transboundary and shared problems, external resource mobilization, exchange of information and experience, and the formulation of regional plans and cooperative arrangements.

2.5 Summary: the Capacity to Realize Health for All

This functional analysis indicates that, to better achieve health-for-all goals connected to sustainable development strategies, governmental health authorities at all levels should have the capacity to:

- participate actively in formulating and revising policies and plans for economic development that involve environmental and social consequences for community health;
- enunciate and update a coherent health policy within the parameters of a national health-environment-development strategy;
- provide expert advice to the various interests identified in 2.4 as to:
  - the state of environment-related diseases and risk conditions within the jurisdiction of concern, taking account of the contributions of preventive medicine interventions,
  - the health aspects of environmental conditions and proposed developmental modifications,
  - the economic implications of existing and modified conditions from the standpoint of health and social values,
  - appropriate norms and assessment methods for containing or reducing environment-based health risks and for improving the state of health,
  - means and methods of improving health through environment-related activities of various sectors and enterprises, including the activities of voluntary and nongovernmental organizations,
  - health considerations in disaster situations that involve community dislocations, and
  - needs and possibilities for research in health-related aspects of the national strategy;

- integrate activities that serve the health-environment-development strategy:
  - within the health authority itself, including its regional and local elements,
  - within the health sector, and
  - with complementary and cooperating sectors and organizations;
- provide information and education to serve a broad spectrum of governmental and community needs, based on multipurpose information and communication systems;
- plan and conduct capacity-building activities within the health sector and in communities;
- promote, develop and participate in networks for research, planning and action, at all levels of the community, including intercountry and international, while fostering the linking of existing and emerging networks towards the effective implementation of policies and strategies, and
- mobilize, motivate and support community-based groups, under sectoral or intersectoral sponsorship, for local planning and action to improve environmental and health conditions, in accordance with the national sustainable development strategy.

Few national health authorities presently have the capacity to carry out these functions, lacking as they are – to varying degrees – in the required skills, access, data, facilities, and other necessary resources. How such capacity might be built, in the face of constraints that are fairly common among countries, is the subject of the following sections.

3. RESOURCE REQUIREMENTS AND CONSTRAINTS

3.1 Resource requirements

Many health authority leaders, if asked what is needed for their agencies to perform their functions in a health-environment-development strategy, would reply, "More resources". Whether this response is correct depends on the meaning they attach to "resources".

The conventional meaning of "resources" in governmental and economic dialogues concerns relatively tangible and measurable objects – personnel, buildings, supplies, machines – to which monetary values can be assigned and communicated, as in budgeting their costs.[14] If the answer, "More resources", refers only to such objects and the funds with which to obtain them, it will be only partially correct and an incomplete appraisal of the needed capacity.

Many national health authorities clearly require additional tangible resources, especially at sub-national levels, in order to participate in sustainable development strategies. This is especially the case in countries whose public health funding has recently been restricted under financial policies aimed at improving the nation's external debt situation.

Certain intangible resources are equally important and, perhaps, more essential. Those intangible resources are of two types. One type consists of the *quality* of tangible resources and how well they are employed. Adequate knowledge and skills of personnel, appropriate equipment and other facilities, and reliable and usable supplies are clearly required. Among the critical skills that the health authority

14 In development policy evaluations, some natural resources are also counted and monetized (petroleum, mineral and timber reserves); the quantity and quality of others (air and water) may be measured, but are less often converted into money terms. A population (human resources) may be counted, as may such of its characteristics as literacy levels and age structures, but they are seldom assigned a monetary value. The formidable measurement difficulties in determining the value of a community's good health is a significant and continuing problem in health policy.

staff should provide are those in risk assessment and management, at central and peripheral levels, supported by the necessary connections with information and analytical resources in related sectors and institutions.

But proper application and management, including the efficient performance of the proper tasks, is also required. For example, a computer and its operator are tangible objects with measurable acquisition and operating costs, but their value as resources depends on the capability of the machine, the aptness of its software, the skills and motivation of its operator, the quality of the data entered, the pertinence and timeliness of its outputs, and whether the output meets the needs of its users – all assuming that the tasks comprise a necessary and justified use under an established plan of work, with defined protocols and procedures. Thus, health systems management – which is largely intangible – is a resource of cardinal importance.

The second type of intangible resources, for which monetary measurements are generally inappropriate, consists of ideas, powers, accesses, linkages and perceptions; more concretely:

- **valid knowledge of health-environment-development relationships, organized in systemic operating doctrines** that are operational, convincing, relevant to the country's situation, and usable in participative planning and operations;
- **norms and standards** that provide practical guidance for governmental and private decision-making and actions;
- **legislation and rules** that properly establish and authorize roles, responsibilities, programmes, and the functioning of networks;
- **operational communication networks**[15] for planning and

15 The preference for "network" over such terms as intersectoral and multisectoral is based on differences in what they imply. Network connotes a functioning interdependency that serves common interest and purposes; it helps minimize "boundary issues". Intersectoral connotes formalized relationships that may or may not be functional, while multisectoral suggests even less interdependency or integration, with impenetrable boundaries kept intact.

action that link all relevant actors, including those in other sectors and their client organizations and those in voluntary and community entities; systematic communications with domestic and external scientific communities are important intangible resources;

- **systematized and pertinent information**, usable in the making and revision of policies and plans, the conduct of operations, and the support of networked relationships;[16] [17]
- **access to relevant decision-making bodies** and, within them, a status and role based on credibility, acceptance and respect, as well as on formal arrangements; this implies that, beyond gaining "a seat at the table" of development planning and policy-setting, health representatives are able to contribute effectively to the process.
- **negotiated agreements**, clear and open to further development, among organizations that participate in the various networks that are formed to plan and implement the strategy;
- **capacity to accomplish needed training** in the health and related sectors (including that for auxiliaries, for community groups, and in private enterprises and associations);[18]
- progressively increasing **acceptance, understanding, and approval** of the role and activities of the agency and the sector, on the part of policy leaders, other networked collaborators, and the public at large, and

16 Information may be either an intangible or a tangible (i.e. purchasable) resource.

17 These information requirements can be categorized as: (1) scientific and technical information; (2) normative information; (3) monitoring data (local and aggregated) on the health and environmental situation; (4) resource inventories, and (5) information on programme and project operations that supports evaluation and re-planning.

18 Capacity entails training strategies, curriculums, materials, trainers, and communication networks, as well as connections between the training and the uses made of trained persons.

- **a capacity-building (resource development) strategy** for the public health system,[19] as part of the national health-environment-development strategy.

3.2 Identifying Constraints in a Bounded System

A strategy to develop the tangible and intangible resources required for adequate performance of the health authority's role inevitably entails adapting to or changing constraints. Constraints are defined as the array of "push and pull" forces – the constellation of "you shall"s and "you shall not"s – that compels or restricts action in any living system. The term "constraint" often carries a negative connotation, perhaps because constraints are considered the same as *re*straints. Generally, constraints are properly viewed as neutral *conditioning* forces, intrinsically lacking either positive or negative values. The values that people impute to a constraint are usually independent of the force itself. For example, the political expectation that the health ministry will participate in sustainable development strategies will be seen as positive in a ministry interested in doing so, and as a negative condition in a health ministry that is not.

Although the configuration of constraints affecting any country and its localities is unique (the result of history, culture, economic and technological state, among other factors), the *types* of constraints are relatively common. Understanding those that may be affecting the health system and possibilities for change is essential to realistic evaluation and planning.[20]

Constraints may be classified as external or internal, once the boundary of the system is specified. For the purpose of analyzing the

19 Again, the term "public health system" is used here to recognize that community health is dependent on what happens in many entities outside the national health authority and the health sector, so that capacity-building efforts must be directed beyond agency and sectoral boundaries.

20 Such an understanding should prove useful in accomplishing the constraint analysis step in the planning protocols discussed in Section 4 and Annex B.

conditions under which capacity-building might be planned, this discussion sets the *system boundary as the formal organization under the direct management of the health minister.* For example, those public health laboratories and training units within the formal ministry structure would be considered part of the system and amenable to ministerial direction, but a different strategy for capacity-building would be indicated if some or all the laboratories and needed training resources were outside the ministry structure.[21]

3.3 External Resource Constraints

Some resource constraints on a health ministry system apply to all countries, and others are country-specific. Among the former might be the funding levels of development aid and international lending that are devoted to health and the state of cooperative linkages between health agencies and the international scientific community.

Other shared external constraints consist of gaps in scientific and technical knowledge about certain aspects of sustainable development, such as:

- the full range of relationships between health and environmental factors, both physical and social, and especially the *synergistic* effects of multiple factors;
- methods of health risk assessment and management;
- effective and adaptable methods of group and community motivation, and
- methods for the economic evaluation of health outcomes.

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21 Although this way of looking at the situation is used here for analyzing the needs of a specific organization, its real-world limitations should be recognized. At national and local levels, a "MOH system" is actually a sub-system of a governmental system and a larger health system, the latter overlapping emerging "sustainable development systems" of countries and communities. Conversely, if one were trying to devise supporting services for one or more community self-help projects, one would set the analytical focus as the project, in order to better understand the relationships within the project and with the resource inputs from public health and other sectors.

(For health advocates participating in sustainable development dialogues, the last of these is a critical deficiency. Development policy analysis is usually conducted by economic ministries using the language and the models of economic science; few current economic models accommodate health and such community-based concepts as human and social capital. In contrast to the progress made in valuing the economic benefits of conserving natural resources, little work has been done on the economic measurement (monetizing) of health benefits in relation to development and environment decisions; [22] *also, data to fit health values into the economists' analytical equations are rarely available. Thus, while health advocates can learn the vocabulary and reasoning of dominant economic models, the available concepts, data and methods do not enable them to present effective challenges, either with alternative models or with analyses that measure and monetize the state of health.)*

Among country-specific variables external to the ministry system defined above, those that can constrain the system's participation in SD decisions (and thereby the system's resource-development strategy) include:

Mandates for the health system's participation, considering:

- the configuration of the country's health problems and needs, existing and anticipated, in relation to demographic, economic, social and environmental trends;
- legal and other formal statement of ministry functions, and
- perceptions of the ministry's character and conceptions of its "proper" role, among political leaders, government officials and the public.

Current and potential policy orientations, including the degree of commitment to strategies for sustainable development and, within those strategies, priorities for the participation of the social sectors,

22 Most current health economics work deals with the financing of medical care and, to a lesser extent, the cost-benefit relations of major diseases (with or without attention to environmental factors) and cost-effectiveness analyses of alternative medical interventions.

improvement of community health, and the funding of social services and initiatives.

Process factors, such as practices in formulating policies at each governmental level (participation patterns, the receptivity of decision-makers to more involvement of health leaders), the rigidity or flexibility of budgetary allocations, and customary patterns of bureaucratic behaviour, including the conduct of inter-ministerial and government-business relations.[23]

Basic political factors, among them the stability of the government and its policies, in constitutional and partisan terms, and the modes of direction and regulation of economic activity,[24] especially as they reflect concerns for natural resource conservation and other aspects of environmental protection and human well-being.

Basic societal factors with resource implications, such as labour force size and characteristics, the vigour of voluntary social organization, and the adequacy of the country's scientific-technical base to support a health-environment-development strategy, including its resource development.

3.4 Internal Resource Constraints

Some constraints internal to the health ministry system, as defined in 4.2, are likely to be objective factors; for example, a small environmental health staff with limited training and experience may provide an insufficient base to meet either the quantitative or qualitative requirements of work under SD strategies. For example, inadequate capacity to monitor the state of health and its determinants or conduct

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23 Of particular relevance are patterns for, and expectations about, intersectoral cooperation and community action on common needs and problems, considering (a) differences between formal arrangements and actual functioning, (b) different behaviours at central and local levels, and (c) whether intersectoral networks include private organizations with which the several governmental sectors interact.

24 Observed practices range from centralized control and state ownership, through more or less control by standards and regulations, to no effective control.

continuing epidemiological surveillance will fail to meet key requirements. In some countries, the entrenched funding distributions in ministry budgets are incompatible with SD priorities and it may be impractical to change the same for reasons of inertia or politics. On the other hand, the system's participation in SD would be facilitated, if the ministry had a viable health promotion programme, experience in promoting community action (perhaps through primary health care or urban neighbourhood initiatives), and an array of bilateral and multilateral working relationships with agencies in other sectors of government.

Other internal constraints are less tangible and more difficult to measure, especially those connected with the organization's prevailing beliefs, attitudes, motivations, and ways of looking at health and disease. While elusive, such factors are at least as important as the more measurable constraints. Indeed, the health ministry's ability to change attitudes and outlooks within its own staff may be the most fundamental challenge to be overcome for effective – rather than token or marginal – participation in SD strategies that integrate HFA. If the organization is unwilling or unable to adapt to the essential characteristics of these strategies, or if it refuses to make its appropriate contribution to their successful design and implementation, the potential will not be realized.

An analysis of these intangible, but fundamental, constraints should consider the following five interrelated factors:

- the degree of dominance of a medical model of health and disease over a social model that includes a wider array of health determinants;
- the organization's perspective on the scope and character of environmental health work;
- policies on decentralization of controls and devolution of responsibilities and skills;
- attitudes towards an involvement with political and economic issues, and
- the influence of specialization on the organization's behaviour.

Models of health and disease: Although increasing attention to a wide array of health determinants appears in public health dialogues, policy development in many countries continues to be focused on issues of accessibility to medical care and the medical means of disease prevention; in some countries, health ministries devote most of their resources to the regulation of medical care, if not to serving as major providers. Although more attention is being given to health promotion approaches, these more often emphasize alterations in personal behaviours and lifestyles rather than regulation and social action to improve the conditions in people's living environment.[25] The linkages between poverty, environmental degradation and disease are increasingly acknowledged in rhetoric, but the idea that health leaders should be acting with others in changing the situation is seldom accepted. Whether our emerging opportunities for integrating HFA into the decision processes of SD will change these attitudes is an important question facing health authorities.

Perspectives on environment and health: If one examines the agency structures and resource allocations, the health ministry outlook on health-environment relations can be sorted into four groups: (1) those in which concerns are limited to the traditional programmes of drinking water supply and basic sanitation; (2) those in which these traditional concerns have been expanded to include problems associated with such other aspects of the physical environment as water and air pollution, occupational safety, medical wastes, etc.; (3) those (few) in which concerns have been further broadened to include factors in the social environment, with some progress in fully incorporating environmental health work into an integrated health promotion process, and (4) those in which the philosophical perspective may be any of the foregoing, but in which environmental health responsibilities have been transferred to other ministries (as in some industrialized countries), thereby enabling the health ministry to concentrate on medical care concerns.

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25 A notable exception is the work of anti-tobacco forces, in some countries, to advocate restrictions on smoking in public facilities, workplaces, etc. and to reduce the access of young people to tobacco products in their environment.

Decentralization and devolution: Both HFA and SD, while recognizing the need for normative and support functions at the national level, emphasize the critical importance of local action, including the involvement of grass-roots stakeholders seeking to improve their own and their community's conditions. Such action entails more than a deconcentration of authority to the local and district units of an administrative structure, sometimes without an enabling decentralization of power and resource controls; it also entails more than a mere transfer of responsibilities and functions to agencies and actors outside that administrative structure. Some countries have made substantial progress towards deconcentration of primary health care and first-level hospital services, but in others such changes are difficult in the face of political and cultural traditions, including those of the medical sub-culture that is reluctant to delegate responsibilities and transfer skills outside of the professional hierarchy.

Political involvement: Another tradition in professional sub-cultures, including medicine, is to stand apart from political processes, in part so as not to impeach the neutral, science-based standing of the individual and the agency, and in part because politics often entails a different (and often less orderly) mode of decision-making. Professional distaste may be intensified in political systems marked by strong partisan differences over ideologies and power distribution, which make it difficult to maintain a non-partisan detachment in policy disputes that require vigorous health advocacy.

Influence of specialization: Institutionalized specialization, especially that which is based on science, is the core of the difficulty; it underlies and helps shape the other constraints. Although not peculiar to the health field, specialization in health agencies is both prominent and highly detailed. Health specialization may be based on: (1) particular diseases or disease-clusters; (2) a variety of skills that range from surgery and computerized diagnosis to statistical epidemiology; (3) groups at risk, or (4) vectors or hazards, with these differentiations further complicated by a hierarchical ranking of professions. At its root is the paradigm of the "scientific method",

emphasizing inductive procedure, which builds from cases towards generalizations, buttressed by experimental norms of proof (truth).

Specialization is a key determinant of how health ministries structure their schemes of authority, responsibility, and accountability. Because of the different bases of specialization, such structures often appear to be inconsistent; some units are organized on the basis of problems (e.g. communicable diseases, nutrition), of process or discipline (nursing, epidemiology, education), of populations at risk (infants and children, women in child-bearing years, the elderly), and of risk-complexes (sanitation, occupational safety). In their vertical dimension (center vs. periphery), the ministry structure can also incorporate speciality based on area and community. Not infrequently, these apparent inconsistencies can produce conflicts among the leaders of the several territories that have been organized on overlapping bases; for example, are the activities of malaria workers to be controlled by the malaria programme at headquarters or by the district health officer? Such conflicts within the ministry structure can, of course, be exacerbated and embarrassing, when specialists are called upon to function within a larger development system such as HFA and SD.

Indeed, the difficulties and tensions arising from specialization internal to the ministry structure have a strong parallel in the difficulties of intersectoral cooperation.

The characteristics that describe a sector apply as well to programme and process units in many health ministries; both have:

- institutionalized patterns of knowledge and expertise,
- well-defined political, professional and administrative "territory",
- continuity in planning,
- accountability and action strategies,
- formalized hierarchies, and

- established resource allocations for specific functions and work.[26]

These characteristics often lead to such behaviours as:

- defensiveness against the breaching of sectoral and programme boundaries,
- deliberate indifference to work deemed to be "not our business" or outside the competence of the speciality,
- trying for autonomy, reducing dependence on others, and
- reluctance to devolve functions to non-specialists outside the hierarchy's control – a preference for "doing to" rather than "doing with".

Across governmental structures, such behaviours intensify other sectors' tendencies to ignore their functions in, and the contributions their activities can make to, community health, especially in the prevention of disease and injury. The traditional segregation of health responsibilities to a sector labelled as "health" often produces situation in which "Not all sectors accept the links between health and environment, and determinants like housing, transport or energy..."[27] And in some countries, the obstacles of sectoral boundaries *at* each level of government are compounded by the obstacles of boundaries *between* governmental levels themselves. Too often, the potential contributions of private and voluntary entities are disregarded altogether.

Within national health ministries, the functioning of programme domains has sometimes taken extreme form, with each "vertical"

26 Degeling, P. and Apthorpe, R. *Can Intersectoral Cooperation be Organized? Uncovering Some Implications of 'Sectors' in Calls for 'Intersectoral Cooperation*. Sydney, University of New South Wales; 1992. Excerpted in World Health Organization. *Intersectoral Action for Health: Addressing Health and Environment Concerns in Sustainable Development*. Geneva, WHO/PPE/PAC/97.1, p. 7.

27 World Health Organization. Regional Office for South-East Asia. *Planning for Health and Environment in South-East Asia: Status Report*. New Delhi, SEA/EH/Meet.1/4.1, 1997, p. 20.

programme having its own laboratories, vehicles and army of workers, refusing to share its resources with other programmes, and operating without regard to or in consultation with local authorities. In some countries, primary health care has not been able to integrate programme activities aimed at the same population, but has been organized as a separate and additional programme. Not infrequently, programmes concerned with the same disease problems operate in isolation from one another, especially if one is medically-oriented and the other environment-oriented; examples are the separation of sanitation from diarrhoeal disease programmes, and air pollution control from acute respiratory infection (ARI) programmes. Efforts to develop integrated country health information systems have been blocked by the persistence of separate, free-standing information systems organized by programme: with respect to the monitoring of operations, one "result is that health workers are often overwhelmed by having to prepare monthly overlapping reports...[as] data are not cross-referenced between different systems."[28]

Uncontrolled specialization has had restraining effects beyond its tendencies to fragment health policies and operations within health agencies. A study of the first 15 years of primary health care in countries found that the weakest aspect of implementing its principles and objectives was the linking of PHC to intersectoral efforts.[29] At the same time, it has been observed that some discrete ministry programmes develop linkages with entities in other sectors and communities quite independently of general policies; whether such developments help or hinder broader schemes of intersectoral cooperation is a question to be addressed in each situation.

The anti-cooperative tendencies inherent in specialization are often magnified by accountability mechanisms in health and other ministries.

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28 Lippeveld, T., Sauerborn, R. and Sapirie, S. "Health information systems – making them work." *World Health Forum*, 18: 176-184 (1997).

29 Tarimo, E. and Webster, E. *Primary Health Care Challenges in a Changing World*. Geneva, World Health Organization, 1994.

These mechanisms are designed to link unit and programme performance with objectives that are connected to resource allocations. This leads to an inherent preference for unit over cooperative work norms, so that one receives more positive evaluations and rewards for work that directly serves unit norms than for work on cooperative activities. Where these structural characteristics are fortified by political considerations, such as fear of losing mandates ("territories") and funding, reducing the barriers to intersectoral cooperation entails more than merely improving communication about shared and common concerns, essential as that is.

The issue is not the abolition of specialization. Specialization is clearly a foundation of competence and effectiveness in doing any agency's work; for some needs, especially with respect to basic research, it may be indispensable. *Nor is the issue the displacement of accountability arrangements* for health programmes and activities; in some countries, indeed, such arrangements require strengthening towards efficiency and effectiveness.

Rather the issue is *how to reconcile specialization with the holistic thinking and approaches that are the essence of the HFA and SD movements.* That thinking hypothesizes the integrity of relationships between humans and their social and physical environments, and seeks to prevent personal and societal "disease" (short and long term) by modulating economic, technological and environmental actions towards both short- and long-term well-being. Translating that thinking into a study of the impact of health requires coherence and integrity in policies, programmes and actions. It also requires that accountability norms be readjusted towards objectives to be accomplished cooperatively, with suitable rewards for those who effectively accomplish such work across organizational, sectoral and governmental boundaries.

3.5 Steady State as a General Constraint

The configuration of the external and internal constraints described above obviously differs from one country's health authority to another. To the extent that implementing HFA and SD requires changes –

whether in policies and programmes, authority structures, responsibility assignments or work methods – all such authorities must confront a general, inevitable constraint: inertia, the force of "what is" and the human tendency to regard as threatening those changes that come from sources outside one's control or choice.

In this respect, one concept of general system theory provides insights useful for reform: the concept of the *steady state* (homeostasis). The concept is based on the observation that systems, notably biological and social organisms, function not at an *equilibrium point*, but within some finite *range*. Whether a change is physical (internal or external temperature) or social (income level, work environment) some degree of change can be tolerated without lasting damage to the organism; if the limits are exceeded, the system may be permanently injured or it may collapse. In the social sphere, for example, most health prevention – and police work – seeks to reduce people's exposures to excessive changes (toxic agents, violence) or to increase their tolerance (immunizing to strengthen the body's defenses against infection); much medical treatment is aimed at reducing the progressive pathology or sustaining the body through a period of attack or lowered resistance.

Applied to the problem of effecting the changes required to implement HFA and SD objectives, the steady state concept implies that the change process should be controlled so as to achieve necessary modifications over time, without exceeding the system's tolerance for change or destroying a valuable social organism. Organizing such a controlled change process is neither a simple nor casual task. Even partial attainment of the social outcomes implied by HFA and SD principles requires redistribution of interests – and perceptions of what people's interests are.[30] The goals entail changes in the decision criteria used in

30 Favourable views of sustainable development initiatives themselves are by no means universal. Disagreements about the validity of some scientific propositions (often embraced by interests that see themselves as short-term "losers"), as well as disagreements about the "costs" of alternative policy directions are involved in both SD and HFA at macro and micro levels of social organization.

policy decisions at all levels, public and private, as well as changes in the thinking and behaviour of consumers, social and political leaders, and governmental organizations. Varying by country and social class, some of these changes may be perceived as radical, and others as tolerable or positively desirable. Many governmental organizations, as social organisms, will find their steady state stressed by requirements for structural changes, use of unaccustomed processes, and adoption of new intellectual and value schemes.

Planning in health ministries for HFA and SD capacity-building should take account of how the steady state in various parts of the system will impose limitations on the introduction of changes. This will require that plans accommodate the constraining forces coming from outside the organization, such as funding limitations, as well as those arising from within the ministry. The challenge to policy leaders and their supporting planning staff is to find and steer a course that runs between the extremes of paralysis on the one hand and organizational breakdowns on the other. Timing is clearly of paramount importance, for the rate at which change is introduced may be no less a determinant of success than the degree of change itself.

4. PLANNING FOR CAPACITY-BUILDING

At this early stage in the implementation of sustainable development, including its health- for-all elements, planning is a major need and activity of governments and other interests. Considering the many unknowns that this new departure entails, such planning must be a continuing and evolving process. Continuity is needed because every country is likely to carry out an exploration based on new premises in public policies, and what may be decided today may well require revisions next month or next year. A national health-environment-development strategy is inherently so novel, broad and complex that it must be undertaken as a learning experience: for the plan to be sound, it must be kept open to what is learned along the way. Uncertainty is likely to be the only certainty in the process, and leaders must acquire the ability to plan adaptively, if the health authority is to be enabled to play its role in HFA and SD.

Who does the planning is an open question. Since implementation depends so greatly on cooperative action, the formation of new planning groups, perhaps involving nongovernmental participants, may be desirable. Also, the need for responsiveness at local and neighbourhood levels suggests that "top down" planning must be complemented by effective "bottom up" planning. Thus, it is likely that health ministries will not only have to carry out planning pertinent to their sectoral responsibilities (which only some are now able to do), but will also need to be able to participate in intersectoral development planning and to provide standards and supports to local planning that is related to HFA/SD goals.

4.1 Progress in HFA/SD Planning

In the years since UNCED, health authorities in about 100 countries have undertaken planning for HFA/SD implementation, a number of

them with support from WHO regional offices and the United Nations Development Programme. This experience confirms that variations among and within countries are to be expected.

Some of the observed variations come from such basic differences as:

- the state of a country's economic development and the strength of its technological and scientific base; national differences in wealth and its distribution imply different social targets and impose distinct conditions on working towards sustainable development;
- the processes and instruments a country uses for its economic and social planning, which differ considerably in their coherence, formality and openness to intersectoral participation; likewise, countries differ in how they organize their *Agenda 21* planning – if any – and how it is related to their existing planning mechanisms,[31] and
- how far their people are prepared to go in modifying their expectations, in balancing short-term needs and wants against long-term goals – essentially, how they are translating "sustainable development" into terms meaningful in their societies and cultures.

These basic differences modulate and interact with the condition of the national public health system, and especially its governmental components.

31 In WHO's South-East Asia Region, for example, eight countries have embarked on making national environmental health action plans (NEHAP). Of these, one is linked to a national 5-year planning system, two to national environmental plan mechanisms, and two to *Agenda 21* capacity-building plans; of the remaining three, two are not linked to any system, and one is in an early stage of formulation.

The experience of recent years strongly indicates that the success of health authorities in HFA/SD planning is dependent on certain variables, including:

- the attitudes and policy perspectives of health authority leaders, especially their degree of interest, both in the environmental aspects of health and in participating in SD policy formulation and planning processes; that is, how widely or narrowly these leaders set their scope of concern for community health;
- the adequacy of information about the health situation and its determinants (including the distribution of needs *within* national and local populations) and whether their information systems are coherent and are capable of linkages with information mechanisms in other sectors;
- the adequacy of their human and other tangible resources to (a) interpret health problem data in relation to root causes, (b) provide up-to-date epidemiological surveillance and (c) participate effectively in intersectoral policy and planning work;
- the openness of their planning processes to wide participation, so as to arrive at a consensus among stakeholders as to the major health problems, their causes, the priorities among them, and useful measures towards solution;
- the degree of realism and explicitness as to the resource implications of plans that are put forward;
- the state of interactions between health authorities and the broad array of "external" interests (Section 3.3.2.4), as reflected, for example, in the inclusion of health issues in national economic and environmental plans and in local social development undertakings, and
- the strength of environmental health legislation and its enforcement by competent institutional resources.

4.2 Need for Resource Development Planning

The common thread running through all these variables is the adequacy of environmental health resources – adequacy in terms of a capacity to perform the functions of advocacy and representation, monitoring and surveillance, system and programme management, community mobilization and technical support, as outlined in Sections 2.2 and 2.3. Many health authorities lack capacity to perform some of these functions, and some of them the capacity to perform most of them. Although most national health authorities have properly given first attention to detailing the configuration of health problems, some efforts to do so have revealed serious deficiencies in the quality and completeness of available information and in the adequacy of minitries' health information systems. As yet, too little attention has been given to defining the resources needed to make effective progress towards Health-for-All within the framework of sustainable development.

Many health authorities, in fact, find themselves caught in a vicious circle. To move towards HFA/SD effectiveness requires resources that they lack, but the very lack of resources thwarts their ability to take even early steps – including adequate planning – towards such effectiveness. Some health authorities lack the capacity to identify what additional resources are needed.

Breaking out of this vicious circle requires that health authorities devote part of their early planning to the issue of overcoming such deficiencies in their capacity; they need to plan the development of tangible and intangible resources that will enable them to plan and implement HFA/SD effectively. As discussed in Annex B, planning for such capacity-building presents formidable technical difficulties. Such difficulties will generally be greatest in countries with few environmental health resources and limited experience in planning, especially collaborative planning with other sectors. In some instances, however, re-orienting the existing staff and resources away from categorical concerns and towards the outlooks implicit in HFA and SD may be as important for appropriate planning as the acquisition of new

resources. This suggests the need for a strategy for resource development planning.

4.3 Assessing the Planning Situation

Although country and community differences preclude a universal protocol for resource development planning, one generally relevant step is to assess the situation in which planning is to occur – to identify and appraise the variables that a realistic plan must take into account. Only when the situation (i.e. the constraints affecting resource development planning) is assessed and understood can proper choices be made on the desired outcomes, subjects and methods of planning, choices that will go far to determine the relevance and practicality of the results.

In order to provide a point of reference for such appraisals, some preliminary sketch of resource needs should be drawn up. A starting point for that sketch can be the very planning step that many health ministries have already taken: an analysis of the country's health situation. The substantive findings of that study, along with a cataloguing of any resource deficiencies and constraints already identified in the course of doing it, together can help form a first approximation of the tangible and intangible resources that will be needed to move further. The pertinent information includes:

1. the epidemiological configuration of environment-related diseases and disease risks;
2. the current priorities for health improvement in public policies and among private entities;
3. deficiencies in planning and intervention resources already identified, especially resources for environmental health and community action, (also considering how available resources are currently used and organized), and
4. the physical and social settings (urban and rural poverty, community organization) in which the problems are experienced and ameliorative efforts take place.

With respect to resource needs, most countries fall into one of the four categories. An industrialized, affluent country that has met basic sanitary, nutritional and shelter needs for all, but isolated poverty pockets, that is mainly concerned with chronic and degenerative diseases and with environmental factors that my be implicated in them, and whose citizens are aware of global ecological problems will have resource needs that are different from those of an industrializing country with a rapidly growing economy, whose health problems include both environment-based infectious diseases and a growing burden of chronic diseases, whose society is undergoing rapid changes in consumption and living patterns, and whose scientific-technical base is growing, but not fully developed. The HFA and SD resource needs in either country will differ from those in a poor developing country whose economy is stagnant or growing slowly, where infectious diseases kill large numbers of women and children, where urban migration is massive, whose population growth rate outruns sanitary infrastructure provision, and whose technical staff are small and weak. Such resource needs will be different still in a country faced with massive environmental pollution threats to health, because past economic policies favoured unchecked industrial expansion and natural resource extraction at any cost. In each situation, resource needs arise out of the health problems to be dealt with (Section 2.2) and the appropriate processes to be used (Section 2.3).

Once a preliminary sketch of resource needs is extrapolated from available information, the constraints in national and local situations should be identified. These constraints will usually arise from variables that can be grouped under two headings: policy context and planning practices.

Policy context. The basis for resource development planning will vary according to:

1. whether, and how far, the country has moved to formulate and implement a sustainable development strategy;
2. whether the strategic approach is comprehensive and radical, or incremental;

3. how the work on the strategy is related to the existing mechanisms for planning and budgeting of government resources;
4. the pace at which the strategy is being formulated and implemented;
5. how much the implementation policy requires the reassignment of existing resources and how much it permits adding new resources;
6. the place, if any, of health and complementary social concerns in the strategy; and, therefore,
7. whether the health authority is under pressure to improve its participative capacity quickly or must itself seek to establish a participative role, and, if the latter, then
8. the access that the health authority has to political decision-makers, and the type and amount of political support it can otherwise mobilize.

Planning Practices. What is feasible in resource development planning will also vary according to the availability of:

1. planning skills and experience within the national health authority or accessible to it, perhaps through secondments and established staff training programmes;
2. useful and flexible planning models and protocols, including those that may be provided by those coordinating strategy formulation under sustainable development;
3. adequate and articulated information bases, to provide data on problems, intervention programmes, and resources, including access to relevant scientific information;
4. established linkages for inter-ministerial and inter-organizational planning work;
5. accesses to other needed resources outside the health ministry (such as information collection mechanisms in other ministries), and
6. the time frames for accomplishing the desired or mandated planning.

In making the assessment, care should be taken not to get lost in the details. Each of the variables identified above incorporates a number of elements (perhaps many) and each element has a value (present/absent, more/less or a quantity). To make the assessment feasible, those making it should seek a mid-point between overs-implification and unnecessary complexity. While each variable should be considered and documented (if only briefly), the assessment should aim to identify the key variables with respect to their constraining force and the possibilities of modifying them.

4.4 Formulating a Resource Development Strategy

The findings of the situation assessment need then to be juxtaposed against the preliminary sketch of resource needs, so as to provide "terms of reference" for formulating a resource development strategy that accommodates the constraints. For example, if the government is committed to rapid SD implementation and regards HFA as integral to it, the health ministry will be constrained to move expansively to equipping itself and local counterparts for participation. If the government commitment is to slower, less integrated SD implementation, resource development will likely have to proceed incrementally over a series of budgets, advisedly coupled with political efforts to increase the visibility of health concerns and the importance attached to health ministry participation in SD. (In either situations, changing the allocation and use of existing health ministry resources to respond to SD policies is a likely expectation.)

Arriving at realistic "terms of reference" is one planning step that is always required. Its accomplishment, however, may not be as straightforward nor as simple as the procedure described in Section 4.3; it may require starting with an approximation subject to revision and correction as the planning process proceeds, encountering both unexpected obstacles and unexpected possibilities.

Beyond that step, a prescription of process is infeasible for two reasons: the often-mentioned uniqueness of countries and a lack of

experience on which to base general advice. In some situations, a modified version of a tested "rational" model for health planning, which is elaborated in Annex B, may be useful; in other situations, the model's usefulness may be limited to its underlying concepts, and in still other, it may not be useful at all.

With respect to planning for capacity-building, as for HFA/SD more generally, the keys to success are likely to be

- involving the stakeholders who are truly integral to the successful outcome of the process, and establishing honest ground-rules for interaction and decision-making;
- obtaining good information on, and properly analyzing, external and internal constraints, as well as health and managerial problem data;
- keeping the process open to changes that are found necessary along the way, recognizing that not all the steps taken and decisions made the first time around will be correct;
- giving attention to phasing in changes at a pace that the institution can tolerate and being active in making incremental changes that contribute to outcome objectives, and
- keeping communication channels – within government, with communities, with counterparts in other countries – open and receptive to useful ideas and methods.

5. CONCLUSIONS

Whether, and to what extent, a country's implementation of sustainable development also strengthens and accelerates the health development of its people depends in part on what is done – or not done – by its governmental health leaders. They face changing opportunities and risks. Less than vigorous and effective health advocacy in the implementing of sustainable development can result both in failure to capitalize on new openings for positive action, and in continued dangers that uninformed and inhumane development policies impose on people's health.

Although significant commitments to sustainable development have been made by many nongovernmental groups and organizations, the primary commitments – as with health-for-all policies – are those of governments. If only for this reason, the assumption and exercise of sectoral leadership by governmental health authorities has become imperative.

The preceding decades of health development experience, marked by the philosophy of HFA and by the widening of environmental health concerns and actions, have helped to redefine the role and functions of health authorities as partners in sustainable development. In order to move from rhetoric to action, health authorities must now become capable of functioning as full and effective partners. Acquiring that capability requires systematic action towards greater systemic capacity within health organizations and more widely in relation to health development outcomes.

Capacity-building requires, beyond acquiring new mandates and additional funds, rigorous examination of the system's attitudes and practices, working towards a paradigm of health that fits an era of social and economic transition. Much hinges on the "political will" of health authorities themselves and on their ability and willingness to learn from and act on experience and to develop the capacity to participate as advocates and guides in fresh efforts to move closer to Health-for-All.

ANNEXURES

Annex A

Health and Environment in Sustainable Development: Five years after the Earth Summit Chapter 7: Conclusion

At the time of the Earth Summit in 1992, the WHO Commission on Health and Environment presented an assessment of the relationship between health and environment, in the context of development. The Commission's report was a major contribution to UNCED and brought health towards the top of the environment and development agenda. The Rio Declaration's first principle affirms that human beings are entitled to a healthy life.

Five years is a short time to report on the progress in such a complex field as health and environment, but the Special Session of the UN General Assembly presented an opportunity for reassessing the available information on health-and-environment linkages and analyzing this information from the point of view of sustainable development.

The major health problems due to environmental hazards remain, but progress can be seen in awareness-raising, policy and planning at various levels, and concrete action, particularly action at the local level. Health indicators in some countries have improved, mainly due to economic development. However, the benefits of development are not equitably distributed; absolute poverty is still on the increase globally, and it is the poor who are most vulnerable to environmental hazards to health.

This reassessment includes the recent quantitative information on the global and regional burden of disease and gives estimates of the impact of major environmental hazards on specific health conditions.

It is becoming increasingly clear that the environmental factors that most affect health are in turn linked to underlying pressures on the environment. These pressures are determined by driving forces, such as

population growth, inequitable resource distribution, consumption patterns, technological development and components of economic development. Since these pressures and subsequent health hazards are associated with the activities of several sectors, effective action to protect health will require coordination and collaboration between these sectors.

In brief , a new perspective on health has emerged whereby health is seen as an essential component of sustainable development, which in turn depends on concerted action by all sectors of society. The 21st Century calls for a new health system which is partnership-oriented, population health-based, and proactive rather than reactive. The health sector must be a guide and partner in these actions so that health concerns are represented appropriately at all stages of implementation.

A number of major conclusions emerge from the assessments made in this book. They are not listed here in order of priority because each of them is of major importance at global level, and the specific concerns at the local and national levels vary.

- Environmental quality is an important direct and indirect determinant of human health. Deteriorating environmental conditions are a major contributory factor to poor health and poor quality of life, and hinder sustainable development.
- The most detrimental environmental impacts on health are related to poverty which itself stems from lack of economic development and inequitable distribution of economic benefits. However, economic development without due concern for health and environment often creates major health risks.
- Populations in the least developed countries are most at risk from "traditional" environmental health hazards, which constitute the largest environmental proportion of the global burden of disease. They include lack of water supply and sanitation, poor housing and shelter, unsafe food and high prevalence of disease vectors.
- The populations of developing countries that are undergoing rapid industrialization tend to be at risk both from the "traditional" environmental health hazards and from "modern"

hazards such as air and water pollution, hazardous waste, unsafe use of chemicals including pesticides, workplace hazards and traffic accidents.

- Major challenges to sustainable development are posted by mismanagement of natural resources, excessive waste production and associated environmental conditions that affect health.
- Wasteful consumption and production patterns in the more affluent countries result in environmental disruption, and counteract efforts to ensure more equitable access to, and sustainable use of, natural resources.
- Growing populations in many countries, combined with the un-met basic needs of the poor, create major challenges with respect to the attainment of sustainable development.
- A disproportionate number of the poor are women. Their poverty, in combination with their traditional social roles, puts them at increased risk for certain environmental hazards.
- Impoverished populations living in rural and peri-urban areas are at the greatest risk from degraded environmental conditions. The cumulative effects of inadequate and hazardous shelter, overcrowding, lack of water supply and sanitation, unsafe food, air and water pollution, and high accident rates, impact heavily on the health of these vulnerable groups.
- The number of urban poor is growing rapidly; estimates suggest that in the year 2000 it will have risen to at least 1,000 million. On an average, 50% of the urban population in developing countries lives in conditions of extreme deprivation. In some cities, the figure may be even higher.
- Within cities, mortality and morbidity rates are higher among people in low-income settlements – due to poor housing, high population density, pollution, lack of basic services and inadequate social amenities – than among people in more affluent areas.
- In rural areas, the main environmental health problems consist of the traditional hazards caused by water and sanitation deficiencies, poor indoor air quality and disease vectors. To these

may be added the increasing risk of exposure to modern hazards such as those created by unsafe use of chemicals in agriculture.

- Lack of economic development in rural areas, and out-migration of males, frequently leave women in difficult economic and environmental conditions.
- Poor environmental quality is directly responsible for around 25% of all preventable ill-health in the world today, with diarrhoeal diseases and acute respiratory infections (ARI) heading the list. Other diseases such as malaria, schistosomiasis, other vector-borne diseases, chronic respiratory diseases and childhood infections are also strongly influenced by adverse environmental conditions, as are injuries.
- On an average, the individual burden of diarrhoeal diseases and ARI is about 100 times greater in the least developed countries than in developed countries. These diseases are particularly serious among children.
- Vector-borne diseases are closely linked to geographic and climatic conditions, and constitute the largest share of the disease burden of certain tropical countries.
- Unintentional injuries, chronic respiratory diseases and cancers are the most serious environment-related health problems affecting adults.
- The workplace is one of the most hazardous environments, with 125 million injured each year in the formal sector; workers in the informal sector may experience even greater health risks.
- In today's world, it is the children's health that is most damaged by poor environmental quality. As much as two-thirds of all preventable ill-health due to environmental conditions occurs among children.
- Deaths due to environment-related childhood diseases could be virtually eliminated by a combination of environmental improvements, immunization and proper health care.
- Environmental improvements are crucial to significant and long-term reduction in the morbidity of these diseases.

- In parallel with industrial development, particular problems for children's health have come to the fore, such as exposure to lead and other hazardous chemicals, which affect children's mental and physical development.
- Environmental improvements create health benefits for both adults and children, thus doubly benefiting the children.
- Lack of basic sanitation, poor water supply and poor food safety contribute greatly to diarrhoeal disease mortality and morbidity. Curative measures have brought the number of deaths from diarrhoeal diseases down, but action that deals with the root causes of these diseases continues to be lacking.
- From 1990 to 1994 the number of people without sanitation increased by nearly 300 million, and in 1994 totalled 2,900 million for developing countries; this figure is projected to increase to 3,300 million by the year 2,000.
- From 1990 to 1994 nearly 800 million people gained access to safe water supplies. Due to population growth, however, the number of unserved decreased only from 1,600 million in 1990 to 1,100 million in 1994.
- In both cases, it is rural populations who are worse off. In 1994 sanitation coverage in rural areas was a mere 18%, whereas it was 63% in urban areas. Likewise, the access to water amounted to 70% coverage in rural areas, but to 82% in urban areas.
- The reported incidence of food-borne diarrhoeal diseases is increasing in both developed and developing countries.
- Programmes to improve sanitation and related hygiene behaviour continue to receive very low priority and to be allocated some few resources. A major change in the understanding of the importance of these issues is urgently required.
- Air pollution figures prominently as a contributor to a number of diseases (ARI, chronic respiratory diseases, cardiovascular diseases and cancer) and to a lowering of the quality of life in general.

- By far the highest exposures to air pollution occur indoors in developing countries, where biomass and coal are used for cooking and heating, causing millions of cases of ARI and chronic respiratory disease. As many as 1,000 million people, mostly women and children, are severely exposed.
- Urban air pollution, while declining somewhat in most developed countries, is increasing in many cities of developing countries, particularly with respect to suspended particulate matter, sulfur dioxide, nitrogen dioxide, hydrocarbons and ozone.
- An estimated three million premature deaths, mainly from acute and chronic respiratory infections, are attributed to exposure to air pollution on a global basis. Of these deaths, 2.8 million are due to indoor air pollution exposures, primarily in developing countries.
- There is every indication that urban air pollution will continue to increase in developing countries due to population growth, urbanization, and increases in motor vehicle traffic, and industrial and energy production.
- The occurrence of the major vector-borne diseases is closely related to naturally existing environmental conditions. In addition, the incidence, severity and distribution of vector-borne diseases are affected substantially by human activities such as water and agricultural developments and by urbanization.
- Malaria is a major disease transmitted by mosquitos, the habitat of which is closely linked to climatic and environmental conditions. Over 500 million people are affected by malaria, in over 90 countries. The problem is increasing, due at least in part, to land degradation, deforestation, the expansion of agriculture and mining into new areas, and urbanization. The high rate of malaria in the countries affected is in itself a major impediment to economic development.
- Schistosomiasis is another tropical disease which is strongly related to environmental conditions. Spreading via a parasite in freshwater snails, it infects more than 200 million people.

- Other major vector-borne diseases, each affecting more than 10 million people and particularly influenced by environmental conditions, such as water, sanitation and housing, include lymphatic filariasis, dengue fever, leishmaniasis and Chagas disease.
- Hazardous chemicals and various forms of hazardous waste, including health care wastes, are growing health-and-environment concerns. The lack of detailed quantitative information on the production and disposal of such waste, and on the resulting health risks, severely hampers efforts to control this problem.
- Hundreds of new chemicals are developed each year, but assessment of their possible long-term risks to health is not keeping pace with this rate of development.
- Evidence is mounting that in developed countries the human exposures and health risks arising from existing hazardous chemicals (such as lead, cadmium, mercury, DDT and polychlorinated biphenyls) have been brought under control, but that this is not the case in developing countries. Of particular concern are exposures to lead and persistent organic pollutants.
- The degree to which health care waste is safely handled is not known, but there is reason to believe that it is frequently treated inadequately.
- Global environmental change has great implications for health, particularly that of the poor. Marginalized population groups are again at greatest risk, as their ability to adapt is limited due to lack of resources.
- The potential impact on health of global climatic change includes the changes in the distribution of infectious and vector-borne diseases, increased heat-related illness, and injuries and diseases due to sea level rise and extreme weather disasters. In addition, dislocation and loss of livelihood may indirectly cause major health problems.

- The increase in the amount of solar ultraviolet radiation reaching the earth's surface is the result of damage to the stratospheric ozone layer caused by the atmospheric release of chlorofluorocarbons and other chemicals. The anticipated impacts on health include increased risks of cataracts and skin cancer, and potential, damage to the immune system.
- The major pollutants that damage the ozone layer appear to be under control, but it appears unlikely that developed countries will in the near future be able to reduce green house gas emissions to levels considerably below current levels.
- Although not yet causing a significant portion of global ill-health, apparent environmental links with the deadly emerging/ re-emerging infectious diseases have created an urgent need to monitor and improve environmental conditions.
- There are some promising signs – not yet in terms of environmental improvement, but rather in the national development of policies and infrastructure to address the problems described here. However, the lack of financial and human resources is a major deterrent to progress.
- Health-and-environment concerns are being incorporated in sustainable development planning in numerous countries. Many countries on all continents have now developed intersectoral health-and-environment plans or are in the process of doing so.
- Community-driven Local Agenda 21 and Healthy Cities/ Villages/ Islands initiatives are growing in number worldwide.
- Local government and nongovernmental organizations are emerging as major development forces and key players in health and environment.
- New effective international mechanisms for collaboration to ensure protection from hazardous chemicals have been developed.
- The development and application of cleaner technologies in industry are being given increased priority.

- The health sector has an essential advocacy role to play in highlighting the links between health, environment and sustainable development when future policies are developed and actions planned. A much stronger partnership between the health sector and other sectors is required for successful reduction of health threats arising from poor environmental conditions. The renewal of the WHO health-for-all policy for the 21st Century, which is currently in progress, provides guidance for the way ahead.
- Intersectoral action needs to be facilitated through new approaches to legislation, budgeting and human resources development.
- Improved information on health-and-environment linkages is required at all levels in order to support policy development, priority-setting and decision-making for action.
- Actions for health are required at all levels: local, provincial, national and global.

Annex B

Planning Model for Capacity-Building

The role of contextual factors in determining the resources needed to enable the implementation of HFA/SD strategies by health authorities was discussed in sections 4.2 and 4.3 of the main text. Recognizing that such factors are likely to remain fluid and uncertain in many countries for some years, the planning processes used in arriving at that determination – and implementing it – are likewise of critical importance. The processes, as well as the plans produced, must be responsive to the context if they are to be realistic and feasible.

Whatever the context and regardless of how the planning is organized, who does it and with whatever degree of formality and elaboration, resource development planning entails a generic logic one with which many health authorities are familiar. This Annex reviews that logic and proposes that it be expressed and applied in building the capacity of the public health system to turn HFA/SD strategies into operating realities.

Finding an Appropriate Planning Model

Over several generations, national and provincial health ministries (especially in developing countries) have acquired experience in the application of a general planning model or algorithm. The specific protocols and the terminology they use may differ, but the deductive logic underlying such protocols is similar and widely accepted. The model's logical structure is summarized in Table 1 and is presented as a narrative in the third paragraph, following.

For reasons discussed below, any of these protocols is likely to have only limited applicability to the planning requirements that many health ministries face in building their capacity to participate in national sustainable development implementation. Despite that, the use of the model (if not the protocols) may be advisable.

In order to arrive at a practical planning method in relation to capacity-building, understanding the logic of the model is a first step. The summary in Table 1 presents this logic in three forms: questions in conversational terms, the parallel technical terms, and as a connected chain or hierarchy of objectives.[32] The deductive logic of the model moves from the general towards the progressively more specific, and each step sets the parameters of the next step.[33]

In a typical health problem application, the terms of reference (Step 1) direct planners to determine the best use of new investment (or a better use of existing resources), either within a framework of health goals or for a more specific subject of concern (infant and child health, for example). The health situation is then reviewed in terms of needs and problems (Step 2) and in relation to alternative, available solutions (Step 3), such as improved sanitation, neonatal and infant care services, nutritional education; these steps would identify a strategic direction and permit the setting of policy objectives. These products of planning would, in Step 4, enable the setting of impact objectives, indicating what an acceptable strategy must be able to accomplish in terms of changes in the health situation. In order to set further parameters for an acceptable strategy, constraint analysis (Step 5) would identify and catalogue the conditions (communications difficulties, available skills, availability of electricity, etc.) that would have to be dealt with in order to attain the impact objectives. Within these parameters, one or more strategies would be formulated in reasonably specific terms; they might differ, perhaps, in the relative weight given to sanitary and medical measures. Evaluating these alternatives would lead to the selection of a strategy (Step 6). The operating system to deliver the strategy would then be detailed

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32 The logic of the model is similar to that learned in medical education and used by most practising physicians. In summary terms, one moves from diagnosis to evaluation to formulating and implementing an intervention plan.

33 Reading downward, each level orients and sets parameters for the level below it; reading upward, each level is limited by the levels above. The words within quotation marks indicate typical subjects at each respective level.

TABLE 1
Summary of a Health Planning Model

Step	Question to be Answered	Technical Term	Level of Objective
1.	**What is – and is not – to be covered by the plan?**	Terms of Reference	Goals "Human well-being (Planning Outcomes)
2.	**What is needed to serve the goals?**	Needs Assessment	Policy Objectives "Improved health states"
3.	**What might be done?**	Solution Analysis	
4.	**What do we want to accomplish?**	Outcome Objective	Strategy Objectives Setting "Impacts to be achieved"
5.	**What obstacles should and can be overcome?**	Constraint Analysis	
6.	**What is to be done?**	Strategy Formulation and Selection	
7.	**How is a changed system to operate?**	Operating System Description	Service delivery objectives "Activities to be reformed"
8.	**How is it to be prepared to operate?**	Implementation Specification, Scheduling and Budgeting	Resource Objective: "Ability to do x" Implementation Objective: "Be ready to do x by time y"
9.	**How is the doing to be managed and improved?**	Project Control Specification	Control Objectives "Keep on course" and "Correct course"

(Step 7), its norms stated as objectives for service provision. These norms would then provide the premises for identifying the quantity and quality of resources needed to deliver the programme's services; this in turn provides the basis of a sub-plan for resource (and operating system) development, including its timing and costs (Step 8). Together, the specifications worked out in Steps 6, 7 and 8, would enable the detailing of management mechanisms to monitor and evaluate progress, as well as to make necessary corrections, in implementation, service operations and the programme strategy.

At first glance, the model may seem inapplicable to defining the resources required in the early implementation phases of a health-environment-development strategy, mainly because the resource needs are identified in relation to targeted health outcomes, rather than in relation to building the system itself. It is not clear, for example, how it can help determine the number and characteristics of environmental health economists to be recruited or the tasks they should perform; or to identify the sectors most amenable to initial cooperation in joint programming; or the practical and relevant targets for early information system development. Also, in typical health programme applications, active involvement of ministry policy-makers is usually required only in setting the terms of reference and the review of recommendations, while the policy uncertainties surrounding the national implementation of sustainable development requires their more active and continuing involvement in strategy planning.[34]

Suitably adapted or "translated", however, the model can serve in resource development planning. Its use is advisable for at least three reasons:

- its generic logic can help ensure the soundness, consistency and coherence of the plans to be produced;

34 This is likely to be the case regardless of the planning model that may be used.

- staff members in many ministries are skilled in using it and thereby provide an immediately available resource useful in formulating the health-environment-development strategy,
- its use can facilitate the merging of resource development plans with ongoing programme plans of the ministry. [35]

Adapting the Model for Resource Development Planning

The model should be adapted to fit national and local circumstances and constraints. To illustrate the feasibility of "translating" the model, this section provides an example of one such adaptation, summarized in Table 2 and elaborated in a narrative that parallels the infant-child health example in Section 1.

The most obvious difference between Tables 1 and 2 is the dropping of Step 7 (Operating System Description) as not relevant to the planning problem. Table 2 also adds parenthetical information on the meanings now attached to the Technical Terms at Steps 2 and 3; also, in the right most column, quoted examples more suited to a capacity-building problem have been substituted for those in Table 1 that relate to health states and service provision. To delineate the adaptation, the following narrative describes its application at the national level.[36]

Step 1. Setting the Terms of Reference: The Ministry leadership assesses the planning situation, considering and specifying the contextual,

35 Also those ongoing programmes constitute some of the constraints to be dealt with in resource development planning. Further, to use an entirely different model is to invite a lack of compatibility between the new and ongoing activities with possible resource duplications and further segregation of programmes and staff with medical and environmental orientation.

36 The process would be similar at provincial and local levels, except where national developments had resulted in such governing terms of reference as policy premises, quality criteria for some types of resources, formats for seeking subsidies, and provision of consultants.

TABLE 2
Adapting of a Health Planning Model to a Resource Development Problem

Step	Question to be Answered	Technical Term	Level of Objective
1.	**What is – and is not – to be covered by the plan?**	Terms of Reference	Goal "Collaboration in sustainable development" (Planning Outcomes)
2.	**What is needed to serve the goals?**	Needs Assessment (by analyzing functions)	Policy Objectives "Improved ministry capacity"
3.	**What might be done?**	Solution Analysis (by cataloguing resource needs)	
4.	**What do we want to be able to do?**	Outcome Objective-Setting	Strategy Objectives "Capabilities to do what"
5.	**What obstacles should and can be overcome?**	Constraint Analysis	
6.	**What is to be done?**	Strategy Formulation and Selection	Resource objectives "Resources to be acquired and developed"
8.	**How is it to be accomplished?**	Implementation Specification, Scheduling and Budgeting	Implementation Objectives "Be ready to do x by time y"
9.	**How is the doing to be managed and improved?**	Project Control Specification	Control Objectives "Keep on course" and "Correct course"

situational and planning variables (Section 4.1 of the main text). In this process, a number of consultations are held with personnel of the Economic Development Division of the Ministry of Finance, which acts as the government's coordinator for formulating sustainable development policies, as well as with collaborators in the Ministry of Environmental Management. On the basis of this assessment, and following ministerial review, the health ministry's planning unit[37] is charged with producing recommendations for building the ministry's capacity to engage in policy-making and programming for sustainable development; recommendations are to consider local as well as national needs. (To meet the needs for interim policy guidance, the planners are to have continuing access to a designated member of the minister's cabinet.)

Step 2. Needs Assessment: In order to arrive at an appraisal of the system's needs, the planners develop separate profiles of the functions the ministry should be able to perform; one profile looks at the situation expected over the next 18 months, the other at the situation five years later. This profiling starts with a standard listing of functions categories (using both Sections 2.2 and 2.3 of the main text), which is then expanded in detail to cover the specifics at national and local levels.[38] The profiles are then compared with current activity patterns to arrive at an approximation of deficiencies. (In the course of this comparison, the planners note for later consideration of the modification of Primary Health Care networks to perform additional community functions; they also identify certain low priority ministry activities to be considered for possible resource reassignments.)

Step 3. Solution Analysis: Using the descriptions of deficiencies produced in Step 2, the planners use matrix analysis to arrive at a

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37 The Unit staff is supplemented by staff from the Environmental Health Division to furnish expertise in substantive matters.

38 In the category of operating programmes , functions are specified for each such programme in which the ministry collaborates or for which it has primary responsibility. In relation to monitoring and evaluation functions, the needs of users within and outside the ministry are projected as the basis for functional specification.

preliminary definition of resource needs. These analyses juxtapose the needs on one axis with the resource requirements on the other.[39] (In the course of these analyses, the planners find they must add to the functional categories employed in the needs assessment.) Following the identification of resource needs, possible approaches to resource mobilization and development are identified as elements of a possible strategy, including possible supports in other sectors and in national and foreign institutions.

Step 4. Setting Outcome Objectives: Before and after doing this step, the planner's progress is reviewed by ministry leaders. The purpose of the preliminary review is a "reality check," to tap information available at the policy level, so as to obtain clear parameters for setting resource development objectives. In this review, policy-makers endorse or reject elements of the specifications produced in the preceding analyses; in some instances, the desired elements in the 18-month profile are moved to the 5-year profile.[40] Based on these interim decisions, planners now formulate the outcome objectives for the capacity-building effort. These are stated in terms of the capabilities to be available by the end of each period, and each objective is properly stated to the extent feasible[41] Because of their importance in setting parameters for the following planning steps,

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39 A starting point is the catalogue of resource categories in Section 3.1 of the main text, with considerably more detailing and specification, especially in the tangible resource categories.

40 The information made available to policy-makers (and the finance unit) at this stage may enable the seeking of preliminary funding commitments from national and external sources.

41 "Properly stated" means that, rather than being vague statements of desired future conditions, each objective should communicate the WHAT (subject), HOW MUCH (the amount of "what"), BY WHEN (time to reach the outcome), WHOM (the target of action), and WHERE (location) of the future condition. Because the present object of planning is the development of capacity, the WHAT of these objectives (results) should be expressed in terms of what resources in place will be capable of doing in relation to implementing the health-environment-development strategy. For example, not "Be able to perform relevant economic analyses" but rather "By January 1999, a health economics team can provide this and related ministries with monetized analyses of the health impacts, in relation to their costs, of alternative housing subsidy policies."

the formulated objectives and supporting analyses are again submitted for review, revision and endorsement at the policy level.

Step 5. Constraint Analysis: On the basis of approved outcome objectives, planners now perform a detailed analysis of the constraints[42] that will affect one or another resource development strategy, including known constraints within the ministry system and in its environment. In addition to identifying the conditions, the planners assess each constraint as to its strength (for supporting or resisting changes) and whether it has to be accepted or can be modified, noting possible tactics for modification.

Step 6. Strategy Formulation and Selection: In elaborating several strategy alternatives, the planners merge the 18-month and 5-year time frames used in preceding analyses. What emerges early in this step is an agreed-upon strategic approach, with differences of opinion on certain aspects, notably the issue of how to organize the work (strengthening the environmental health division or distributing health-environment responsibilities more widely), degree of reliance on out-of-country support in developing information systems, and whether training capacity should be developed in-house or supported in national universities. These alternatives are evaluated as to their feasibility, desirability, and estimated effectiveness in achieving outcome objectives. A detailed strategy description is prepared, documenting what resources are to be developed in each of the six years, how they will be used in the national and ministry strategies, and how the effort is to be supported. The review, revision and endorsement of the strategy description by the Ministry then provide a basis for its implementation.

Step 7. Implementation Specification, Scheduling and Budgeting: The strategy is converted into operational terms, including identified activities, the specified times at which activities are to be performed, the agents and agencies that will perform them, and how the performance is to be supported by the assignment of existing resources or by purchase

42 See Sections 3.3 and 3.4 of the main text..

of services and facilities.[43] The product of this step is an extensive, action-specific, time-specific documentation of the plan that, among other information, alerts resource users to when new and modified resources will be available to them.

Step 8. Project Control Specification: In order to ensure that the implementation is properly carried out, a project management mechanism is established, including the designation of the persons who will be responsible for monitoring activities, signalling their starting and completion, arranging for adjustments when problems arise, and perhaps finding better ways to achieve resource development objectives as strategy implementation unfolds. This mechanism also helps ensure that, if and when major changes in national policies and strategies occur, appropriate adaptations can be more easily handled.

Thus, the use of the modified health planning algorithm, through protocols suitable for the national or local situations, can provide a rationalized and orderly way to solve the problem of building the capacity of health authorities to engage in health-environment-development strategies. At the least, it can help to clarify and organize information amidst the policy uncertainties about the implementation of sustainable development that prevail in some countries. To the extent that such uncertainties have been reduced, or if the health authority has even a partial mandate for action, this planning approach can help produce realistic, economical and defensible proposals for resource development, as well as foster the coherence of action.

How well this approach can serve depends in part on the availability and quality of the authority's planning resources, especially human and information resources. Building up such resources may require, in some countries, a preliminary development effort. But, unless systematic initiatives are undertaken, the price to be paid for such effort may become increasingly high and result in disservice to the people.

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43 This phase of planning usually depends heavily on the use of network analysis, a set of techniques for plotting activities in relation to time and to each other, so as to avoid omissions and duplications, inconsistencies in sequencing and conflicts arising from simultaneous demands on the same actors. The analysis is also useful in the budgeting process, as it identifies the time when expenditures will be required.

"...a new perspective on health has emerged whereby health is seen as an essential component of sustainable development which requires concerted action by all sectors of society. The 21st Century calls for a new health system which is partnership-oriented, population-health based, and proactive rather than reactive. The health sector must serve as a guide to and be a partner in these actions so that health concerns are represented appropriately at all stages of implementation....

"The health sector has an essential advocacy role to play in highlighting the links between health, environment and sustainable development when future policies are developed and actions planned. A much stronger partnership between the health sector and other sectors is required for reduction of health threats from poor environmental conditions. Renewal of the WHO Health-for-All Policy for the 21st Century, which is currently in progress, provides guidance for the way ahead..."

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